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THE

INDIAN FORESTER.

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Note on the use of Simul wood for Tea boxes in Assam.

The wood of the Simul tree (*Bombax Malabaricum*) is used extensively in Assam for tea boxes, as the following figures prove :—

Number of boxes on which royalty has been paid during the Forest year, 1893-94 :—

Lakhimpur division		2,48,816
Sibsagar	„	29,572.
Darrang	„	89,935.
	Total	368,323.

During the same period of 1892-93, the number of boxes on which royalty was paid amounted to 322,676, and in 1891-92 the number was 303,924; these figures show a steady increase, but they do not represent the total trade in tea boxes, as in some districts trees are sold for this purpose, and some boxes are made from timber on private estates, as explained in the Forest Administration Report for 1892-93, para. 95.

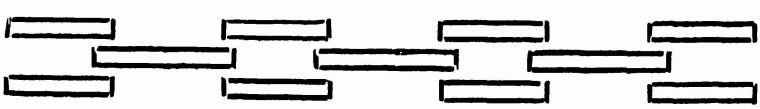
In the Lakhimpur division there are six saw-mills constantly at work: (1) Mukla, (2) Sissi, (3) Oriental, (4) Balijan, (5) Bokel and (6) Tapajan. In the Sibsagar division, on the left bank of the Dehing river, there are two mills, (1) Hopewell and (2) Dehing; and in the Darrang division, there is a branch of the Sissi mills at Tezpur.

The Sissi Saw-mills and Trading Co., Limited, being the largest of those concerns, may be taken as a type. They work on what is called the "box royalty" system which may be briefly described as follows :—The Manager of a mill is supplied by the forest office with permit books, and he issues permits to contractors to fell Simul trees in the unclassed State forests within the

division. The trees are felled and logged during the cold weather, and are floated down during succeeding months to the mills, which are all situated on waterways. The larger the girth of the log the better for the mills, the length is generally 8 to 10 feet. The rafts of logs are kept in the water until they can be sawn up. The logs are first ripped up in a frame saw, and then pass through a variety of circular saws until they emerge as "shooks," *i. e.*, the actual pieces of which the box is constructed. These "shooks" are of varying widths and lengths to suit the different sized boxes, which are classified as follows:—*Large*, 24″ × 20½″ × 20″ outside measurement; *Medium*, 22″ × 19″ × 18″; *Small* 20″ × 16″ × 16″, and 18″ × 15″ × 15″; also *cubes* 16″ inside measurement. The Sissi saw-mills also prepare boxes of the Japanese size 24″ × 20″ × 19″; and special sizes are cut to order at an enhanced rate of two annas a box. The prices charged at the branch saw-mill at Tezpur, which is situated on the Brahmaputra, are, for large boxes, 14 annas each; for medium 12 annas; and for the small boxes and cubes 8 annas. Corner pieces, and battens are supplied free of charge with each box.

The method of seasoning is as follows:—First, the logs themselves remain in the water for two to three months; if they are kept longer in the water they develope a peculiar unpleasant odour, which is got rid of with great difficulty even when the logs are cut up into shooks. It is found impossible to season the logs on dry land as they soon rot; so the general plan is to saw them up soon after their arrival at the mill, when they have perhaps been in the water one, two, or three months according to distance, number of logs in stock, &c.

Directly the "shooks" are sawn up they are stacked on end out in the open, four together, and turned every now and then for a fortnight, by which time, if the weather has been fine, they are quite dry; and they are then stacked in an open shed, so that air can play between them in the following manner:—



Even with these precautions, if the boards are kept stacked for any length of time, they develope dry rot to an alarming extent; and they are also liable to be attacked by a small beetle locally known as the "Ghong," which is probably a species of Bostrichus. The only remedy for the latter is to watch the stocks, and remove any boards which show signs of the insect, and burn them. For the former there is no remedy. Consequently, the object of the mill Manager is to get rid of his boards as soon as they are sufficiently seasoned. In the busy months, June. September, there is no difficulty in this, as the indents received

keep the mills at work from 17 to 18 hours a day, and the difficulty is to supply tea gardens fast enough. But before these indents come in, a large stock is liable to accumulate, and there is always a good deal of loss.

In case of emergent indents, boards are sometimes despatched from the mills before they are thoroughly seasoned, and in this case a warning is sent with the consignments, and a careful garden Manager will unpack them at once and subject them to further drying in an open shed. But as a rule only seasoned "shooks" are despatched from the mills, and they can be made up into boxes at once. At the time of despatch the shooks are tied up into bundles, containing sufficient boards for four boxes, but this rule is not invariable.

It is not considered advisable to place the boards in water, this always discolours them, and planters would reject them. The best plan is to keep them perfectly dry, in a well ventilated shed, and to use them as soon as possible after they are once seasoned; one month is quite sufficient for this process, and there will seldom be any "cheesy" odour about the boards if the above precautions are attended to.

The saw-mill managers distinguish between *red* and *white* Simul wood; the former, known locally by the natives as the male tree, gives the best boxes, but it takes a little longer to season; the latter, known as the female tree, is also used, it is said to have a more open grain and to season more quickly.

Occasionally logs of other woods are brought in by mistake for Simul, and some of these have a most unpleasant odour like rancid butter, notably a wood called "Kaddam" or "Makai," a specimen of which has been sent to the Director, Forest School, for identification.*

The Mill Manager's books are open to inspection, and are frequently inspected by the Forest officer, and a statement is supplied every 10 days or so, shewing the—

No. of logs received and sawn up daily.
No. of boxes turned out daily.
No. of boxes delivered daily.

Payments are made to the Forest Office on "deliveries" (*i. e.*, boxes despatched) at the following rates :—

Large boxes at	1	anna each
Medium ,,	9	pies
Small ,,	6	pies

Scantlings @ 1 An. 3 pies per c. ft.

The total revenue received from this source in Assam during he forest year 1893-94 was Rs. 20,016.

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* *Note*—It has proved to be the wood of *Anthocephalus Calamba*, a tree whose wood certainly had no previous reputation of the kind.—*Hon. Ed.*

There is no doubt that well seasoned Simul is a favourite material among the tea planters for boxes, and as the tree is very fast growing, there is not much chance of the supply being exhausted just yet, though the contractors have to go further and further from the mills every year.

A. SMYTHIES.

The above was received from the Inspector General of Forests who has been making enquiries on the subject of the use of 'Simul' wood and other woods for tea boxes. He has also sent us a letter from Mr. Fordyce now in charge of the Andamans Forests, who writes as follows :—

Most of my experience regarding the use of Simul wood for tea boxes was gained in Assam, and I had a good deal to do with inducing the planters to set up the saw-mills now existing in the Lakhimpur District. Neither planters nor the owners of saw-mills are very particular what wood is used for tea boxes, as long as it fulfils certain conditions. The following are some of the woods I have seen used :—

Simul (*Bombax Malabaricum*), Raghoo (*Anthocephalus Cadamba*), Sontiana (*Alstonia scholaris*), Hollong (*Dipterocarpus pilosus*) &c., &c.

Hollong is one of the woods that, if not thoroughly seasoned, has an acid reaction on the lead, forming a white precipitate, and ultimately entirely destroying it. The chief wood used in the biggest saw-mill was Simul.

For the Sissi mills contractors fell chiefly Simul, it is cut along the banks of the Brahmaputra river, and thrown into the water, where it is made up into rafts and floated down to the mills. Here the timber lies in the water until required for cutting up. It is then taken straight into the mills and cut up into shooks of the required size. These shooks are then taken off to a long thatched drying or seasoning shed, where they are packed carefully with spaces between each shook, so as to allow the air to circulate freely between the boards.

If the weather is fine these shooks are often taken out and stood on end in threes or fours in the open air. After the shooks have undergone this process for a certain time, they are put into bundles, tied round with cane, and despatched to their destination.

On arriving at their destination some planters, I believe, open out the bundles, others leave them as they arrive, until required for making into tea boxes.

It is very hard to say how long the Sissi saw-mills keep their logs in the water before sawing them into shooks. This depends a good deal, if not entirely, on the supply of timber they may have in hand; and I feel quite certain that it is not for seasoning purposes, but purely as a matter of convenience that they are

left in the water; as situated where they are, they can in most months float the timber right up to the mills, and this facilitates the handling of big logs enormously. However, on an average, I should say their logs were in the water at least a month before they are cut up.

Then again arises the question how long the shooks are in the process of drying and seasoning before they are despatched to their destination. This time again varies. At the slack time of year, the shooks will be kept under this process longer than in the busy season, when, very often there is a sudden demand for boxes, when the drying process is reduced in time as much as possible.

My estimate of the time the shooks are drying and seasoning is from two to four weeks in the Sissi saw-mills.

At other saw-mills, *i. e.*, "Planters' Stores" and "Dehing" saw-mills, I have seen "Simul" logs taken out of the water immediately they arrived, and put through the mill and cut up into shooks. This timber could not have been in the water a week, and probably only two or three days. The latter saw-mills were often very hard up for timber, and in many cases their shooks must have been despatched to their destination after only three or four days' seasoning and drying.

Again I would mention the case of Mr. Peal's mills. Situated as they were, timber could not be rafted to them. The timber (Simul) for these mills was dragged direct into the mills, so that the logs were never in water at all. Here the logs were stacked close to the mill, and were very often cut up more or less green, and the shooks seasoned in a drying shed.

I have never heard of "Simul" being cut up into planks and then being put into water. I don't think any advantage would be gained by doing this.

In the Andamans we use what is said to be "*Bombax insigne*" for cutting up into boxes for the local tea garden. The logs we use have been in depôt for two years or more, Chester having used them for floating down "*Lagerstrœmia hypoleuca*" and "*Pterocarpus Indicus.*" These logs are not sound, and ever since they have been in depôt, they have been constantly submerged at high tide. We take these logs over to the mill, floating them over, cut them up at once into shooks and let them season, as a rule, for about three weeks under cover.

Drawing my conclusions from the above facts I should say:

1st—That water seasoning, either before or after sawing Simul, is not necessary.

2nd—That if water seasoning is done it should be done in the log.

3rd—*That* after *Simul* has been cut up into planks or shooks, 3 to 5 weeks in a covered drying shed is sufficient seasoning for all practical purposes, for the making of *tea boxes.*

4th—In dry, fine weather the drying and seasoning process can be greatly helped by standing the shooks on end in the open.

C. FORDYCE.

In the Darjeeling Terai, it used to be the custom for planters who used Simul wood, or other soft woods like *Anthocephalus Cadamba, Canarium bengalense, and Duabanga sonneratioides* to cut them up into planking immediately after felling, stack them on end for a while, and then make them up into boxes. In Dehra Dún there is too great a prejudice against Simul wood, to allow of its use, if it were to be regularly used it would be advisable to plant, for there are many areas of land which will not grow Sal, but which would grow Simul excellently. As regards the colour and quality of the wood, we believe that seasoning, either in water or not, is a mistake, as it has the effect of discolouring the wood. To keep it white, we believe, it ought to be cut up at once after felling.—*Hon.-Ed.*

Influence of Places on Spirits.

Have you ever experienced, on reaching certain places when on tour, a buoyancy of feelings, whilst on reaching others a depression comes over you. I ask this question because I think that the buoyance or depression arises from a variety of causes; and the experiences of many persons would provide interest, amusement, or sympathy, as the case may be Of course, frequently, the causes of depression or buoyancy are palpable on the face of it; for instance a person has heard that a certain place is dead-alive, and he naturally is depressed in going there; the more so if he finds that his experience is that of his informant.

Again, previous experiences rather tend to bias one in favour or disfavour of a place; thus a person who has had some great mishap in a certain town, for instance, will generally, although he may have liked it well enough prior to the mishap, think it is unbearable after the occurrence.

Moreover, one's state of health is apt to imbue the locality with favourable or unfavourable feelings, as the case may be. Finally, the state of the weather is apt to influence. The combination of these influences, and many more, makes a marvellous variety of impressions, and there is invariably a liability to alter our opinions in regard to a place whenever these conditions are in any way changed.

For instance, a friend of mine heard that the Trossachs in Scotland was a lovely piece of scenery. He arrived there on a wet afternoon, and rather out of sorts; and thought that, at least, it was decidedly commonplace. He went there a second time in good spirits on a fine day, but expecting nothing out of the common, and found it as nearly perfect as could be seen.

Again consider the haunts of our youth, not visited from an early age until we have reached manhood. Lakes dwindle into ponds, palaces into petty country houses, and so on. But what I specially refer to are cases where there are no especial reason for buoyancy or despondency. I have been out but 6 days from head-quarters, and on two occasions I have felt a feeling of buoyancy on arriving at certain camps, whilst at another I have felt decided depression. The depressing place I have been to upwards of twenty times, and always felt the same feeling more or less. The first time I went there I had received a glowing account from a late official in the district, after whom one of the suburbs was called. But before arriving there I experienced a horror at reaching it. My horror on that occasion were fairly justified. We—that is, wife, two children and self—arrived the other side of the rapid large river, that borders the town, just as the sun was setting. We had to be paddled across the raging torrent, for the river was very high, in a small over-crowded hand-paddle boat. We reached the opposite side, after sundry shipments of water, when it was dark, and we were then 2 miles from the dâk-bungalow, which had to be reached on foot over a desolate, sandy tract. On reaching the bungalow, no one was there; and when some one did arrive half an hour later, we learnt that the departmental boat had been taken off the day previously to the next district by the Conservator, and we should have to travel down in a native craft. However, our woes came to an end, the children slept, we had dinner, and at its close we learnt that the departmental boat had been returned by the Conservator. Moreover, the scenery from the river, especially at sunset, is beautiful. And yet everytime I go there I get this fit of depression on reaching it, although the congenial people I meet there speedily drive it away.

The first place on this tour, when I became so buoyant, I had never been to before, and knew nothing about. On inspection when the day broke, (I was travelling by canal), I found a medium sized native village completely surrounded by water, as the canal had overflowed, why then should I have been so joyous ?

The next place I had passed before in my boat, but never stopped at. In my previous passages past it, it had certainly looked lugubrious enough, nor can I find, even after my fit of buoyancy, any real cause of joy for arriving there.

RAHDARI.

Forestry and Sylviculture.

The following is a reprint of the greater portion of a lecture given by Mr. D. E. Hutchins, Conservator of Forests, at Cape Town, on the 20th June, 1892 :—

In the Cape Colony and the Transkei we have about 550 square miles of high timber forest, and there is a larger area of scrub forest of which it is difficult to estimate the value or

even the area. We shall dismiss this in a few words. It will not pay either to conserve these scrub lands strictly, or to survey them accurately ; and in many localities they are of less value, either for forest or for grazing purposes, than would be open land of the same area. Of such is the Addo Bush, and the scrub lining the valley of the Fish River and other rivers on the eastern side of the Colony. The high timber forests of the Colony, leaving aside a small area of poor forest on the coast of the Alexandria Division, occur within the Colony in two localities, *i. e.*, at Knysna and the Amatolas. The Knysna forests stretch along the flanks of the Outeniqua mountains between George and Wit Els, near Storms River. The Amatola forests lie at a higher level and clothe, more or less continuously, the southern slopes of the Amatola mountains to the north of King William's Town, extending with the continuation of the mountains from near the Kei River to the Fort Beaufort division north of Grahamstown. Within these two groups of forest about four-fifths of the total area of forest still remained at the disposal of Government when the Forest Department was put on its present footing in 1883. Since that time there has practically been no further alienation of forest ; and the Knysna forests and the Eastern forests have been definitely constituted and set aside as a national trust. They have been placed in the charge of professional forest officers, and are now managed as are the forests of France and Germany. On this system the forests are being gradually improved instead of being destroyed, and no more is taken from the forests than the normal growth of the forests is calculated to yield. Mr. Theale in his able history of South Africa gives the popular view of forests in this country. Vol. I., page 182 :—

"All our indigenous, useful timber is of exceedingly slow growth, and the best is found in situations difficult of access. A South African forest is composed of a variety of trees mingled together, in which it rarely happens that half-a-dozen of one kind are found growing side by side. Gigantic creepers twine among them, and the spaces between the trunks are filled with tangled underwood and enormous ferns, so that one cannot proceed far without the aid of the axe.

"In such a forest the woodman fells a tree, which in its fall clears a large open space, where afterwards only a useless scrub springs up. To get the log out a pathway must be opened broad enough for a team of oxen to move in, and straight enough to prevent jamming. For this purpose a great number of smaller trees must be cut down, so that the quantity of wood contained in a wagon or the roof of a house represents but a very small percentage of the quantity deducted from the forest, and of that none is ever replaced. In this way the forests of Knysna and Tzitzikama, of the Winterberg and Amatolas are disappearing now just as those in the Cape Peninsula disappeared two hundred

years ago. They cannot be used and preserved too, as in countries where timber is of rapid growth, or as artificial forests, where waste can be avoided."

This quotation states in a few words the historical view of the subject. We foresters claim—and it is a claim that anyone can satisfy himself about by taking a walk through the forests—we claim to be using and at the same time improving the forests in our charge.

The forests at Knysna and along the Amatolas are managed on this system. The larger forests are divided up, and the small forests grouped together into a working unit called the "Series." In the Knysna Conservancy there are thirteen Series, with an average of about four thousand acres each. Each Series is divided into forty equal parts termed Sections, so that these Sections average about one hundred acres each.

One of the series in the Knysna Conservancy—that nearest George—has been so much overworked in the past that it has been entirely closed for the present. So that there are now open and being worked at Knysna twelve Sections, averaging a hundred acres each Each year in each Series a fresh Section is opened. It will thus take forty years to work through each Series, and at the end of that time the Sections first opened for working in 1883 will again have mature wood grown up in them. When a forest Section is worked not all the trees are cut down but only those that are mature. Who is to judge what trees are mature? In this lies the pith of the whole matter. If you leave the judging to the wood-cutter, as in the old days, he will very naturally judge those trees mature which suit his own convenience. He will pick out the best trees and leave the worst to grow and form the forest of the future: he will overwork and destroy the accessible forest and leave mature timber to rot in the inaccessible forest. To avoid these evils, each forest Section, before being thrown open to the public, is thoroughly and closely examined by the Forest Department. Every tree in the Section is inspected, and those which, *looking at the future of the forest*, should now be felled are numbered, measured, and entered in a book kept for the purpose. This is a long and tedious business, and occupies the Conservator and Foresters for several months. We are always glad when it is over. It is pleasant to walk through a marked Section. At about every hundred yards (the distance depends on the density of the forest) lines termed virées have been cut to guide the workers. As one walks down these lines, or along an old slip-path, or occasionally along an elephant-path, the trees marked for felling come into view. Each of these trees carries a large cross in red paint high on its trunk; at its foot half-buried in fern and beautiful foliage is a number also in paint, and below all, probably on a gnarled root, is the Government stamp. With a little practice you will be able to see why each tree marked for felling has been selected. Here is

a hoary old giant of several centuries' growth. His massive limbs were flung out very much as they now are when the white man first came to the country ; his bole runs up straight and cylindrical for forty or fifty feet like the columns in the aisle of a Cathedral. No one cared to tackle him under the free selection system. He may be still good timber, or he may be a mere shell and too rotten already to work with profit. It is easy to see why *he* has been marked for felling ! By his side perhaps stands a slender stripling. We wonder why *this* has been marked for felling. Surely it will be worth much more in forty years. But it bears the fatal red cross ; and we look again. There on the other side of the trunk is a black streak ; higher up a decayed branch. That tree is rotten at the heart. It must be cut down to make room for a sound tree. Whatever value it has is in the present. In marking the trees for felling in a forest Section this is the principle followed :—*Unless there are cultural reasons to the contrary every tree is marked for the axe that will not in forty years increase in value more than its present value put out at interest at four per cent.*

Before a tree is marked for felling one has to look on the ground and look around to see what there is to replace it. No forester, if he can help it, makes a large gap in the forest. A gap in the forest is a dangerous thing, It lets in wind and sun. Wind may blow down the surrounding trees ; sun is more to be feared—it deteriorates the forest soil, induces a growth of grass and inflammable herbage. A sudden exposure to sun will kill the seedlings of forest trees. Stinkwood is especially tender in this respect. So you see that when a Forester plods down the virée lines day after day, marking the trees that are to be felled next year, he has plenty to think about, plenty to do ; and when each year's Section of forest has been completely examined, the most arduous part of his duties for that year is over. His work is checked by his superior officer, the Conservator, who, book in hand, checks 10 per cent. of all of his measurements, and criticises his selection of trees for felling.

Everything being now ready the forest Sections are thrown open to the public on the 1st of March in each year The forest remains open for felling till the following June. All timber has to be worked and got out of the forest by the end of December : 15,000 trees on an average are thus felled yearly in the Knysna Conservancy. The average size of the timber from these trees varies according to the quality of the forest. In the Gouna forest near the port of Knysna, where it is almost virgin forest, the average of the trees felled is 56 cubic-feet each. In the poor forests near George and Plattenberg Bay, in forest that has been overworked and irregularly worked for fifty years, this figure falls from 56 cubic-feet per tree to only 12 cubic-feet, and as low as 8 cubic-feet at Wit Els, the end of the forest country towards Humansdorp.

Each Section remains open for two or three years. It is then put in order by the Forest Department and closed for 40 years. Planting and thinning, more or less, according to circumstances, are required to put a Section in order. As a rule planting is only required at Knysna in case of accidents, such as forest fires. If all goes well, no planting is required. Thinning is always necessary. The thinning done at Knysna is called "improvement thinning." Its object is *not* to decrease the number of stems per acre, but to favour the more valuable species. The value of the different woods in the Knysna forest varies much. There are a number of woods that are practically valueless. There is one wood that sells at 1*s* per cubic foot as it stands in the forest, a wood for which there is an unlimited demand, and a wood that we might send all over the world if we only had enough of it. I refer of course to Stinkwood. By improvement thinnings we can produce Stinkwood trees at a cost of about three farthings per tree. This is the way it is done: the Forester goes over the forest with three or four wood-cutters and wherever he finds young Stinkwood seedlings dominated by inferior species he fells or rings the latter, and sets free to the young Stinkwood trees. Only those who are familiar with the social economy of a close forest can appreciate the force of this operation. Charles Darwin in his masterly way describes the struggle in a close forest: in the animal world the struggle is mainly for food; the fittest survive. In the forest world struggle is for light. When we ring or kill an inferior species in the forest and so let in the light upon a dominated Stinkwood seedling, the practical effect is that a Stinkwood tree is produced. As I mentioned above, the average cost of this work is about three farthings per tree produced, so that it is more remunerative than any planting. It is also more certain since a tree is produced with the surroundings and on the spot where nature has placed it for thousands upon thousands of years back into the dim distance of geological time! It would take up too much space were I to attempt to describe severally the beautiful woods in our forests. I may just mention that Stinkwood is the valuable tree of the Knysna forests, and Sneezewood of the Eastern forests. In the Transkei both of the woods are found. In the Colony Stinkwood is found only to any extent in the Knysna forests, and Sneezewood only in the Eastern forests. The two species of Yellowwood constitute about 50 per cent. of all the timber in the forests. The two wagonwoods—Assegai and White-pear—occur throughout the Colony and the Transkei; but they are never abundant, and would in course of time become extinct, but for the cultural operations now undertaken in their favour. Ironwood is everywhere superabundant. It is hard to find outlets for it. It is a very beautiful but very hard wood. For general planting purposes our indigenous forest trees have not much practical value. They are all slow-growing,

and do not thrive away from the damp equable climate of the coast and the mountain ranges facing the sea.

Before quitting the Knysna forests, I must say something about the sleeper industry of Knysna. In most respects this is the most successful of all Colonial industries. It was begun in 1884, and during the last four years, one hundred thousand sleepers have been turned out yearly at an average cost of 5*s.* 5*d.* per sleeper. The average cost of the sleeper imported from England has been 5*s.* 6*d.*, *or one penny dearer*. Wood is worked at Knysna under difficulties, especially in the matter of roads and transport that do not exist in Europe, so that in producing in the Colony a sleeper cheaper than can be imported, the result achieved is one that we may well be proud of. And this is not all. The Colonial sleeper is not only cheaper than the imported sleeper, but it is a better sleeper. It is harder, and so resists wear better. As to its durability, we have the best possible guarantee since we creosote it ourselves at Knysna. In the imported sleeper we have no such guarantee, and I am sure I shall betray no confidences when I tell you that many imported sleepers have come to this country with only a layer of creosote on the outside They have been put on to the Railway, and I have seen them taken out still sound on the outside but rotten inside. Such a sleeper besides being a fraudulent article is dangerous to lay a line on. A formal promise has been given that no more wooden sleepers shall be imported. Some people will tell you that the days of wooden sleepers are numbered. I do not think so; and I am in a position just now to speak with some degree of confidence on this subject. The summer before last I made a tour through Germany, Switzerland, Holland, Belgium, and parts of Austria and France with the express purpose of renewing my acquaintance with the forests and of studying the sleepers used on the various lines of railways. I found that iron sleepers were making their way very slowly. In Switzerland and some of the German States, one-fourth of the total extent of railweys was laid with iron sleepers, but this was the highest proportion. There are objections to the use of iron sleepers which have not yet been overcome, and probably never will be. The iron pot sleeper is clumsy and is used less now than it was 20 years ago. Various patterns of bent sheet iron sleepers are now being tried, but these are all much more expensive than wooden sleepers, they do not give such a good permanent way, and their exact durability, as compared with wooden sleepers, remain to be tested. I have seen the rust coming off some of them in thick scales. Until a galvanised sheet iron sleeper can be produced at a moderate cost, I believe that wooden sleepers will always hold their own. The great railway companies in England, with the finest railways in the world in their charge, will have nothing to do with metal sleepers. Our Colonial railways are, however, more like those on the Continent of Europe, and it is to these we must

look for guidance in the matter. They, as I have mentioned, are adopting iron sleepers very slowly; and I cannot but think that we should do well to imitate their caution, and not, as at present, use only iron sleepers for the new railways in the interior, and for renewals on Colonial railways a short distance away from the coast. In the Karoo, iron sleepers are of course at their best, but in damp, warm climates they rust very rapidly. For our forests, the sleeper question is one of very great importance. Sleeper wood and other woods grow side by side in the forests. As long as the sleeper woods are utilised, the forests are worked at a profit. If we have to leave the sleeper woods to rot as was the case before 1884, it is so much loss to the forest revenue, and to the public who are the owners of the forests. Even more important than this is the money spent in the Colony instead of being sent away to pay for imported sleepers. Every year that the normal supply of 100,000 sleepers is taken from Knysna £24,000 are spent on Colonial wood and Colonial labour. And lastly, there is this point about the sleeper industry, the *labour is nearly all white labour.* I do not think there is any other Colonial industry quite in the same position in this respect.

Sleepers as yet are not produced from the Amatola forests, although there they could be produced cheaper than from Knysna, since the railway passes through the end of the Amatola Mountains, and on to the Port of East London where the creosote could be landed.

In the description of trees growing in them the Amatola forests differ little from the Knysna forests. As I have mentioned, imperishable Sneezewood replaces the valuable Stinkwood; and, as always happens, the variety of species increases. This is not usually an advantage. The Eastern forests are managed on the same general system as the Knysna forests. Natural reproduction is not so good as in the Knysna forests, and more is spent on plantations. Where the railway passes through the Eastern end of the Amatola Mountains, at Fort Grey, there is a very extensive and flourishing group of plantations. These plantations being on the line of railway are very favourably situated for taking wood up to the treeless country to the north. The demarcation of the Eastern forests fell to my lot in 1883. We had a difficult, and to some extent, a dangerous task. The memories of the last Kafir War were still fresh. The Fingoes and Kafirs had patched up their difference, but no one felt quite sure how long this would last. For the time being, both were cultivating the arts of peace, which, as regards the forest, was very rapid destruction. Mealie gardens were eating into the forest in every direction. Frequently several forest fires could be seen at one time, all proceeding from the same cause, the felling of the forest for native gardens. I knew exactly what was required. I had ten years' experience of this sort of thing in India. We pitched our tents and got to work in a few days. We laid out our lines of demarcation, erected

our beacons, and mapped out permanent boundaries for the forests. For the first year or so little opposition was shown. Then the "native mind" became aroused. There is something mysterious and awe-inspiring about this phrase "the native mind." More is usually known about it at Cape Town than on the frontier. It is an intangible and immeasurable quantity. No man may tell its exact height, breadth, and depth. But in 1885 we felt its power. For some time it looked as if our work, and with it the forests, would be abandoned to destruction. Then better counsels prevailed. A Government Commission was appointed which, after long and close enquiry on the spot, practically confirmed all we had done. Our demarcation lines remained, and the forests were saved! The forests now had definite boundaries, and as soon as a man and an axe crosed these boundaries he had to justify himself before the magistrate. Then arose another difficulty. Here were forests, forest officers and magistrates, a plentiful crop of forest offences—but no forest laws. Many of our magistrates are negrophilists and in their hands forest protection on the frontier was little more than an expensive farce. This was remedied by the Forest Act of 1888.

In the Transkei, Forestry is beset with many difficulties. Considering the state of the country good progress is being made in demarcating and conserving the forests. That an efficient check is now being placed on the fearful forest destruction that prevailed there a few years ago is shown by the long yearly roll of successful forest cases.

[At this point of the lecture large polished specimens of all the valuable Colonial woods were shown, one by one, and descriptions given of the trees that produced them]

I shall now throw on the screen some views of Colonial forest trees taken in the forest under my supervision.

No. 1.—A Yellow wood tree. It does not look so big in the picture as it is in reality.

No. 2.—Red Els, growing on top of a mountain on bare rock. It is quite certain if that tree were not growing there, nothing else would.

No. 3.—Wild Lemon tree.

No. 4.—Tree from gorge, Pirie forest.

No. 5.—An overworked forest, ripe for fire—portion of Pirie forest.

No. 6.—Sneezewood and Kafir-plum trees, Perie.

There is one general feature running through all the views—the smallness of the bulk of wood per acre.

In this matter our forests are inferior to those of Europe. It is a failing that will decrease with the regularization of the forest now taking place, and the replanting of burnt forest. I should have mentioned that last year at Knysna rather more than 12 young trees were planted, mostly in burnt forest, for each tree felled.

In our indigenous forests, small though they are compared with the forests of other countries, we have a valuable possession. Unfortunately there is practically no indigenous forest near Cape Town, nor even in the west of the Colony nearer than Knysna, so that the tendency has been to neglect the indigenous forests in favour of plantations. Out of sight has too often been of mind. Then, too, from an administrative point of view, there has been the trouble with the local population living in and near the forests. These people gradually get to look on the forests as theirs—it is the same story everywhere—and to resent the necessary restraints required for the preservation of the forests. And thus it has come to pass that, relatively, too much attention has been paid to plantations, and too little to our grand, natural forests. We see and enjoy the one, the other is hundreds of miles away. The tree at our doors looks larger than a square mile of forest on the frontier!

But, if we put the matter to the test of figures, we see that our best plantations are mere child's play compared to the natural forests. If the 550 square miles of natural forest in the Colony and the Transkei were to be allowed to be destroyed, to replace them on the basis of present cost of plantations would require the enormous sum of nine million pounds sterling. Any such expenditure is of course entirely out of the question. The natural forest must either be preserved by careful and systematic management, as at present, or else inevitably lost to the country for ever. How easily the natural forest may in a few years be totally destroyed, we see in the history of the Katberg forest and the forest near George. The first was managed by Government, the second by the Municipality of George. In both, the felling was done under supervision and with the best intentions for the preservation of the forest. In both, east and west, the result was the same—final destruction by fire. The management of the evergreen forest of warm temperate zones is by no means an easy task. An amateur had much better try his hand at building a five-storey house or a modern ironclad!

A cause which has operated against forest conservancy in the Colony has been the prevalence of English ideas, and as English ideas have had, and will have, so much influence on forest conservancy in this Colony, I must say a few words on Forestry in England.

Forestry, as it is understood in France and Germany, is unknown in England. The average Englishman may be said to know about as much of forestry as a Chinaman of electricity. And the worst part of the matter is that he does not want to know anything about it. He wraps himself up in some trite free-trade maxims, remarks that land is valuable in England, and that it is cheaper to import timber from abroad. But now what are the facts? The beautiful forests of oak, beech and Scotch pine that once covered the greater part of Great Britain and Ireland are gone. Miserable mismanaged remnants exist in a few localities, but for all practical purposes

the ancient forests of the two islands have ceased to exist. So completely have they disappeared that in the cases of some of the most famous old forests, antiquaries cannot now say for certain in what counties even they were situated. Since the time of William the Conqueror, forestry in England is one long sad story of ignorance, apathy and neglect. Barren mountains, dreary heaths, and profitless bogs occupy the waste land, and the tourist in search of the picturesque hurries across the channel whenever he can snatch a few days leisure. Now let us see what England pays for this waste of its resources. The tourists rush away from the desecrated land like rats from a sinking ship. Tourists spend a good deal, but the loss of their money is a mere flea-bite. For imported wood England now pays every year the enormous sum of fifteen million pounds sterling. During 1891 six and three quarter million loads of timber, valued at fourteen-and-a-half million pounds sterling, were imported. Sir Herbert Maxwell, in an article in the *19th Century*, tells us that a further sum of fourteen million pounds is paid annually for forest products, such as bark, turpentine, resin, nuts, &c. I have no details of these figures, and so shall say no more about them, but the fifteen million pounds paid yearly for imported wood has been discussed by Dr. Schlich (the Principal Professor of Forestry at Cooper's Hill), in a paper read in March, 1890, before the Royal Colonial Institute. I have also have had the advantage of talking the matter over with Dr. Schlich, and this is what he says :—Of the fifteen million pounds sterling paid yearly for wood imported into England, about three millions is for tropical hard woods that cannot be grown in England. The remainder, that is to say twelve million pounds sterling, is for wood that could be grown equally well in England ; and further, Dr. Schlich reckons that if the waste land of Great Britain and Ireland were under forest this quantity of wood would be produced four times over. So that twelve million pounds sterling are now paid yearly by English simply as the penalty for the blind neglect of its forest resources in the past.

To my mind the saddest part of the whole story is this : The twelve million pounds sterling that is paid to Russia, Sweden, France, Germany and North America has to be met somehow, and it is paid in manufactured goods, goods that are produced by the labour of the factory operative, that physically degraded type of humanity one sees in all big manufacturing towns. With the destruction of the forests in England have gone the stalwart men who once worked in them, to be replaced by the factory hand—weak-lunged, knock-kneed and sallow. One has only to travel through the forests of the continent and then visit a few of the large manufacturing towns of England to have this physical degradation of the race brought home in the most forcible and unpleasant manner. Dr. Schlich estimates that one million people live directly on the forests in Germany, and three million people on forest industries, the first earning in wages about eight million pounds and the

latter about thirty million pounds sterling. But let us consider the one million people that live and labour in the forests. What a reserve of national strength! They are fairly, most people would say sufficiently, educated; and their healthy life in the open air and constant exercise preserves a physical development, a strength of frame, sinew and constitution that is rare in these days of machinery and easy chairs. Judging from what I saw at a recent visit to the forests of Germany and the big towns of England, I should say that England could better afford to pay twelve million pounds sterling a year to make good her wasted forest resources than to lose the broad-shouldered and muscular men who once worked in her forests. These are the men whom we value as colonists—men fitted to form the backbone of nations.

A very interesting table is given at page 54 of Dr. Schlich's Manual of Forestry. There he shows that in the matter of forests England stands below all the civilised nations of the world. In Germany 26 per cent., or just over a quarter of the whole country is forest. Great Britain and Ireland follow after Portugal in the list with 4 per cent. of woodlands. Even this wretched 4 per cent. is not forest but parks and scattered ill-managed plantations, producing timber inferior to forest timber. Country gentlemen will tell you that plantations do not pay, and I am sure I am not surprised at it. The year before last I spent several days in rambling over the historical New Forest in Hampshire. It represents about 100 square miles (nearly the area of the Knysna Forest) in the heart of fertile England, condemned to perpetual sterility by Act of Parliament. The situation is very well put in the article I have mentioned already, by Sir Herbert Maxwell. It would be ludicrous if it were not so sad!

When the home-staying Englishman talks to you about forests and free-trade heed him not. England is rich and strong, but can she long stand this drain—*twelve millions sterling paid yearly to the foreigners for wood that would be better grown at home, and her strongest men turned into hysterical factory hands?*

The wealth and strength that Germany draws from its forests are astounding. Travelling through southern Germany from east to west, one is never out of sight of forest; at one time surrounding us with the breath of its poetry and beauty touching us; at another clothing with wealth otherwise barren ranges of mountains. One traverses villages where the inhabitants have their firewood and fodder free, their rates and taxes paid for them, their school and libraries built, out of the revenue drawn from the village forests. This is an important point to remember. In France, Germany and Switzerland (two of these States, Republics) the communal forests belonging to villages are managed by Government forest officers, and the proceeds handed over to the villages. Taking Germany and Austria together there is a trifle over one acre of forest per head of population. Though the forests of

Germany, France and Switzerland have been managed on the present system for one, two and sometimes three centuries, there has been a steady increase in the quality of the timber during the last half century.

The dwellers in climates warmer than Germany derive an additional advantage from their forests in the improvement of the climate and the increase of the water supply. A long series of carefully conducted experiments has shown that forests do materially modify climate. (1) They render it several degrees cooler. (2) They render it less brusque, *i. e.*, less subject to extremes. (3) They slightly increase the rainfall. (4) They largely increase the yield of springs. These are benefits in which countries, situated as is Cape Colony, participate to the fullest extent.

Comparing Colonial forests with the forests of Europe and North America it will be seen that we are at a disadvantage on the following points :—

(1) Absence of pines—It is calculated that 9-10ths of all the wood used in the civilized world is pine wood. Pine wood with its tissue more or less full of turpentine and resin has a distinct advantage over the empty tissue of yellowwood. It is this emptiness of tissue that, more than anything else, renders yellowwood so liable to warp.

(2) Superabundance of useless hard woods, specially Ironwood.

(3) Want of access to forests.— It is only two years since purely forest roads have been made at Knysna. These roads cost from £60 to £80 per mile, and usually pay the total cost of construction in the wood brought over them in one or two seasons. The waste in working wood without roads at Knysna has been almost incredible. How such a state of things could have lasted so long is most extraordinary, considering the forest roads in Germany.

When all is said, the main difficulty in the way of the more extended utilisation of the Knysna forests lies in the difficulties of transport. To these difficulties of transport on land are added excessive charges for sea transport. It costs (within two or three half crowns per ton) as much to bring wood from Knysna to Cape Town as from Europe to Cape Town.

The extension of our forest resources opens up an almost boundless field of usefulness ; it will slightly improve the climate ; it will largely increase the water supply ; it will afford profitable employment for a large number of people—employment that will keep the people in the country and on the soil as in Germany, France and Switzerland, and not force them into the big towns as in England and Australia. Lastly, our forests are a very solid slice of national wealth. They are now being regularised and improved on the German system, extended by plantations and opened up by roads. Last year the Forest Department at Knysna planted at the rate of twelve trees for every tree cut down, and made two forest roads. The revenue from the Knysna

forests has doubled during the last five years; and is now sufficient to cover all ordinary expenditure. It will not be the fault of the Forest Department if there is not soon a handsome surplus. The Colony now pays on an average £100,000 yearly for imported wood.

II.—CORRESPONDENCE.

Water Areas in Reserved Forest.

DEAR SIR,

When I see legal questions asked in the *Forester*, I have observed that you are glad to have an answer from me, even though the space and time for transit that separate us are so considerable. Moreover, I feel that if others have already sent you an answer, you have always the option of omitting mine; and besides, it may sometimes be useful to have two independent opinions. I proceed therefore to reply to the query in your No. for July 1894, page 259:—

It will be observed, that the conditions of Indian life, unlike those of Europe, necessitated our opening the Forest Act, with a provision for *constituting* the 'Forests' or areas which were to be subject to Forest Law. In Europe, these areas already were known and existing. Accordingly, the third Section of the Act of 1878 speaks of *land* in which Government has rights, &c., that would hardly justify us in taking up a lake *merely as such*, or an extent of river, or tidal water without reference to the Forest on either side. In the nature of things such a course could hardly be necessary. But if the water were not merely an area of water by itself, but could be regarded as part of an area of land, or as a natural feature of the land, which Government required to treat as forest, then, there is no doubt, that the lake, river, tidal water, &c. included in the boundary, would be part of the forest area, and subject to the Forest Law; if any rights to use water, to fish, etc., were claimed, they would be enquired into and settled under Chap. II* This is obvious from the terms of Sec. 25, which refer to 'fishing,' 'poisoning water' and to rules made on the subject; such a provision could not be effective unless the enclosed river, lake, etc., were part of the forest and subject to the Forest Law.

I do not know what is meant by a "public right of way" to lake B situated in a reserved forest. If there were a public road leading to the lake, it would necessarily imply some right in the public to use the water of the lake in some way, and such a right

* Sec. 10 does not mention rights to 'use water,' but practically such rights (often of great importance) have been held to be included (cf. Sec. 12 Burma Act.)

should be defined and provided for by the settled arrangements of the Forest. And so, if a private right of way existed to the lake, it would, of necessity, imply that there was some right of using the lake, otherwise why is there a right of way to it?

It will be remembered that Government has a general right to the use and control (for public purposes) of all rivers, streams and lakes and 'natural collections' of water (Act VIII of 1873). This applies to Northern India and the Central Provinces, but there are similar laws elsewhere (see, for example, Bombay Act VII, of 1879, & especially Sec. 37 of the Bombay Land Revenue Code.)

There can be no sort of doubt that a person, who had no right defined and recorded under Chap. II, to use water, or to fish inside a reserved forest and proceeding to do so, would be guilty of a civil trespass, and could be ejected, and further, if having no such right, his fishing, &c., were in contravention of rules (Sec. 25 *i*,) he would be liable to criminal prosecution. Sec 31, (*j*) makes the same principle applicable to the so-called "Protected Forest," only that there is the same doubt about rights that there is in every case owing to the general imperfection of the procedure regarding the class of Forest.

OXFORD,
August, 1894. } B. H. B-P

P. S.—I do not know whether 'fish' are intended to be included in "wild animals" of the definition of "Forest Produce" (*b*. iii), probably they are, but the matter is unimportant, as rules may regulate or prohibit "fishing" in any case.

A Cure for Snake-bite.

SIR,

In the article on "Cure for Snake-bite" in the August issue of the *Indian Forester* there appears to be nothing new in the remedy recommended. The usual method of obtaining ammonia is by treating any ammoniacal salt by a fixed alkali. A sulphate or hydrochlorate of ammonia is generally heated in a retort with lime, ammonia being given off, and sulphate of lime or chloride of calcium being left in the retort. Similar results may be obtained with chloride of ammonium (sal ammoniac) and "chunam." The strength of the solution of ammonia would depend on the operator. The first symptom of ammonia poisoning are irritation and constriction of the throat, which always resulted in Mr. Twining's practice. We may therefore conclude that Mr. Twining's specific was simply a strong solution of ammonia, and that he first recovered the patient from partial or total collapse by the aid of a strong stimulant; and then, the stomach being able to work, induced vomiting by repeated weaker doses of the same medicine It is improbable that vomiting would have any beneficial effect on the patient; but served as a visible proof that he had received as

much stimulant as he could hold. If the act of vomiting was necessary to the cure, other more powerful nauseates could be used. Probably Mr. Twining would have been more successful if he had stopped short of inducing vomiting, allowing his patient to retain the stimulant. As to the "internal slaking" of quicklime that had already been completed in the retort, that is to say, if quicklime was foolishly used, it would probably be as easy for most people to swallow the cobra as to swallow quicklime, and the ultimate result would be the same in both cases.

O. S.

White-ants and Mr. Cotes' Manual.

DEAR SIR,

I have just come into possession of the Manual of Zoology, prepared by Mr. Cotes for the use of Forest Officers in India. I find Mr. Cotes classes the white ants (*Termitidæ*) and dragonflies (*Libellulidæ*) in the Orthoptera. No doubt he has good reason or good authority for doing so, but to me that given in the Manual, *viz.*, that, like the Orthoptera, they have no pupal stage of rest, seems inadequate. The wing characters, which in these two groups are exactly those of the Neuroptera, seem to me far important.

With your permission, I propose to add here a few remarks on the life history of tha *Termitidæ* to the account of them given by Mr. Cotes, in the hope that I may induce some of your readers to make a study of these curious insects.

It is the general, indeed as far as I know the invariable, rule among the Insecta that a female once fecundated is fertile for life, whether that life be one of hours as with the butterflies, or of years as with the social bees and the ants. Amongst white ants this is not so, the male and female live together as husband and wife all their lives. Mr. Cotes mentions a class of the community, besides the "female or queen," which he calls "winged males 'and females" "which fly out of the nest in clouds, generally after 'rain." The name used is not absolutely scientifically correct, for these are not males and females, but *potential* males and females, in the sense that their sexual organs are not developed. They pair, it is true, but the marriage is not consummated until 10 days or a fortnight later, during which interval the female, always closely followed by the male, has selected and taken possession of the site for the new nest (either in or outside the old nest). This unique (?) system of betrothal is apparently a provision against the chance of adulterous unions (which, as I have shown above, are possible only among the Termites), for the unattached bachelors who formed a large proportion of the original "swarm" have all been cleared off by lizards, birds, &c., long before the date of the actual consummation of marriage between the paired couples. The danger would, however, again arise as soon as new males were

born and adopted into the nest with their wives. In a species whose nests I examined in South Africa, I found that the first work of the first generation of workers was to wall up their father and mother in a clay shell rather larger than a walnut, with only one small opening, too small to admit any but a worker. Do the Indian white ants do this, or anything analogous? Every one must have been struck with the parallelism between the social organization of the Termites and the ants, especially in the neuters (?) or workers. But there is a fundamental difference, for among the social bees and wasps and the ants the workers are all aborted females, while the worker white ants are as often aborted males as aborted females. Can this be connected in any way with the half developed males mentioned above? For a thoughtful observer there is a most interesting field of enquiry open among the Termites.

R. C. W.

The strongest timber.

DEAR SIR,

In the *Indian Forester* you ask for information about the iron-wood called 'Bilian' coming from Borneo.

In the Dutch periodical "Natuurkundig Tydschrift van Nederl. Indië," Vol. 25, pp. 1 to 6, the following information is given regarding the *Eusideroxylon Zwageri* by Messrs. Teysmann and Binnendyk. "It is common in Borneo, in the coast regions, 'not in marshy places but rather above the line of the highest 'rise of river inundation. It is known locally by the names 'Belian', 'Blian', 'Boelian', 'Toelian' and 'Oelin.' In Bangka and in Sumatra (Palembang) it is called 'Onglin' or 'Balian.' The wood is as durable as iron, or even perhaps more so. Posts which have for 20 years or more stood the influence of rain and wind, seem now almost as fresh and strong as when the wood was freshly felled. In a short while, Indian Forestry will have some informatiom on the subject, for the Dutch Government has, since May last, had a commission consisting of an Oberfôr-ter, two assistants and natives arranging for the exploitation of the 'Onglin' forests of the province of Palembang in Sumatra.

S. H. KOORDERS.

III.—OFFICIAL PAPERS & INTELLIGENCE.

Imperial Forest School Report, 1892-93.

The following is the Resolution of the Government of India on the Forest School Report, 1892-93. We have no information on the subject, but we presume that the Government of India has

been trying to persuade the Government of Bombay to utilize the Institution like the Government of Madras. We believe that the Bombay Forest Officers are mostly, if not all, in favour of the arrangement which, of course, could only tend to improve the general *esprit de corps*, and that it is some sort of jealousy which prevents the Governor of Bombay and his advisers from acceding to the wishes of the Government of India :—

"Orders on the Administration Report of the Imperial Forest 'School for the period of fifteen months ending 30th June, 1893, 'were deferred pending consideration of proposals, which have now 'been negatived, for the utilization of the Institution in the scientific 'training of the subordinate forest establishment of the Bombay 'Presidency. During the period under review, a complete set of 'rules for the constitution of, admission to, and discipline at the 'college were issued with the Resolution of this Department. 'No. 11-F., dated 28th June, 1893. These rules were prepared by 'the School Board of Control, and submitted at the close of the 'period under notice, during which the school was successfully 'administered under previous regulations and practice. In these 'circumstances the work of the year and the results achieved, 'which reflect credit on the school officers, call for no further 'observations or orders."

Allowances of Working Plans Officers.

The following new rule regarding the grant of allowances to Working Plans Officers has been published :—

"The Local Government may, when a working-plan has been 'approved and accepted, sanction to any officer who may have 'been in charge of such plan, a remuneration which shall not 'exceed Rs. 100 per mensem for the time during which he has 'been at work on such plan ; provided that no remuneration 'shall be granted unless the Local Government is satisfied that the 'officer has undergone exceptional exposure or incurred excep-'tional expense. This rule shall apply to both specially appoint-'ed Working-Plans Officers and Divisional Forest Officers in 'charge of working-plans.

"The rate of remuneration shall be fixed with regard to 'the importance and character of each plan, the labour and ex-'posure entailed in its preparation, and the proportion of the 'officer's time occupied in its elaboration. The limit of Rs. 100 'per mensem shall not be exceeded in consequence of an officer 'being employed on two or more plans at the same time.

'When two or more officers have been in charge of the same 'plan or plans, the remuneration granted should be divided in 'proportion to the time that each officer was in charge, subject to 'the consideration of the quality of the work and the labour 'entailed in each case."

IV.—REVIEWS.

Annual Forest Administration Reports, for 1892-93, for Bombay and Burma.

The chief event of the year in Bombay was the formation of a new Circle by sub-dividing the old Northern Circle, so that there are now four Circles in Bombay: Northern, Central, Southern and Sind. To the great disappointment, however, of Bombay officers, there is a decrease rather than an increase in Conservatorships, for two of the appointments, at present, the Northern and Sind, are to be held only by Senior Deputy Conservators. To have started a sense of disappointment and injustice for the sake of Rs. 400 a month was hardly worth while, for the money might easily have been saved in some other way.

The Circles as now divided comprise the following districts—

N. Circle—Thana, Surat and Panch Mahals.

C. „ Khandesh, Nasik, Ahmednagar, Poona, Satara, Sholapur.

S. „ Kanara, Belgaum, Dharwar, Bijapur, Kolaba, Ratnagiri.

So that it would seem that the contention of the Southern Circle Conservator that the two Concan districts of his charge ought to be transferred to the Northern Circle, or the whole arrangement altered, has reason for support.

Mr. Dasai's report on the new Northern Circle is an interesting one, and contains many points worthy of note, and among them the following remarks by the Collector of Thana regarding the high percentage of acquittals in his District:—

"I review nearly all forest convictions myself, and I think 'the falling off in percentage of convictions to be rather due to 'greater care on the part of the Magistrates (formerly very lax in 'matter of evidence in forest cases) and to the personal equation 'of one or two Magistrates than to any difference in the depart-'mental methods of prosecutions."

We wonder if he took any steps to make the latter set of Magistrates understand that justice, and not personal bias, was what was required when cases had to be tried, forest or any; and whether he had any idea how extremely difficult it is for a Forest officer to obtain full evidence, even in cases where there can be no practical doubt of the matter.

In the Central Circle Report, too, there are some remarks on the question of forest prosecutions, which are of interest :—

"The cases prosecuted in the course of the first twelve months 'of the forest year in the Satara Division exceeded by 37, the 'number of the year before, and the percentage of failures shows a 'slight increase. The Divisional Forest Officer complains that 'some of the Subordinate Magistrates deal out very lenient law to 'the offenders, and dismiss them on the grounds that "the offences 'were not intentionally committed, and the accused had no inten-'tion of setting the forest on fire when he was smoking in the 'forest, and therefore is not guilty;" and in cases in which men 'of position, such as patils, &c., are accused, they are dismissed, on 'the plea that they are not the sort of men to trespass cattle. It 'is no wonder, then, that cases which are fully scrutinized by the 'Divisional Forest Officer before they are sent for trial, should go 'to increase the percentage of failures, for the Forest Act does not 'recognize intention, and the Divisional Forest Officer in his 'treatment af forest offences is guided by the Forest Act, while 'the Subordinate Magistrates ignore the forest law on the point, 'and require "intention" to be proved."

Again, in Sind, the question of prosecutions is discussed, and an example is given where a Divisional Officer, who seems to have taken too literally the remarks made last year by the Commissioner, got duly snubbed for his pains:—

"The Deputy Conservator regrets to report that the remarks 'made by the Commissioner in Sind in para. 6 of his review of 'last year's report have been misunderstood, and have caused Di-'visional Forest Officers to refrain from instituting proceedings, 'where proceedings were necessary. In one instance a Divisional 'Forest Officer refused to prosecute in a case, and when called 'upon for an explanation, wrote: "I have no desire to be harsh 'in administrating the law, and I hoped it would be understood 'that, in declining to prosecute in the case under reference, I was 'endeavouring to carry out the Commissisoner's wishes." This, of 'course, could not be allowed, and the Deputy Conservator was com-'pelled to write to the Divisional Forest Officer as follows: "I am 'afraid you are allowing the Commissioner's remarks in para. 6 'of his review of the last Administration Report to influence you 'more than they are intended to do as regards the prosecution for 'forest offences in your Division The Commissioner never in-'tended that serious forest offences should remain unpunished. 'He simply wished to caution forest officers against any undue 'severity, and to impress upon them the necessity of acting in a 'kindly and forbearing spirit to those living on the borders of the 'forests—nothing more. It is scarcely necessary for me to point 'out to you that should it become known that you decline to take 'action against offenders, offences will increase to the detriment of 'the forest, and the demoralisation of those serving under you. 'The disinclination you appear to manifest to support those of your 'subordinates who have actually been assaulted, will have a ten-'dency either to prevent them, through fear, from doing their duty,

'or it will cause them to combine with the people and take com-
'pensation from offenders for their own benefit. In the case
'referred to in the letter under reply you are requested to pro-
'secute the offenders."

It is satisfactory to read the remarks of the Government on this subject, for they lay down their policy in a dignified and satisfactory manner:—

"The percentage of failures is higher in all the Circles than
'in the preceding year, and notably so in the case of the Nor-
'thern Circle and Sind. The reasons given for this result are
'various. Different Magistrates hold different views as to the
'gravity of offences against Forest law, and as to the nature and
'amount of evidence sufficient to justify convictions in such cases.
'The result may be due, as Mr. Sinclair surmises in the case of
'Thana, to greater care on the part of Magistrates in weighing
'evidence rather than to any difference in departmental methods
'of proceedure. There appears, however, to be on the whole a
'prevailing disposition on the part of the Magistracy to treat for-
'est offences leniently. It is the policy of Government to prevent
'forest restrictions from becoming harassing so far as is possible
'with due regard to the paramount importance of preserving the
'sources of supply. Leniency in dealing with breaches of For-
'est law is proper in the case of first offences and petty and isolat-
'ed pilfering for personal use. It may also be proper when restric-
'tions necessitating sudden changes in the daily habits of the
'people have been recently introduced, and are imperfectly un-
'derstood. But leniency is misplaced and destroys the deter-
'rent effect of criminal prosecutions when forest depredations,
'however trivial they may appear when considered as individual
'isolated acts, have become in any locality, in spite of repeated
'warnings, systematic and persistent."

Some of Mr. Dasai's remarks on natural reproduction are worth quoting especially those which relate to the result of the coppice cutting :—

"In the Thana forests natural reproduction was vigorous
'during the year and would be perfect if fires and cattle trespass
'could be wholly checked. The coppice in most of the exploited
'coupes grows fast, though the teak excels other species in this
'respect during the first years of its re-growth. The shoots also
'suffer to certain extent, when they first commence to appear,
'from the browsing of wild animals, such as nilgai and four-horned
'antelope ; the neighbourhood of a recently felled coupe being al-
'most a certain find for one or other of these animals. In a good
'many of the compartments exploited in the earlier years of the
'Working Plan rotation, *i. e.*, in 1887-88, a dense crop of promis-
'ing mixed forest is now to be seen, and the progress made by
'each year of successful closure in dominating the grass, reeds
'and other noxious growth has secured the compartments from all

'possible danger from fires. So long as there is a sufficient area 'open to grazing for the wants of the people, it is not advisable to 'shorten the limit of closure of ten years fixed in the Working 'Plan, for the longer the young stock is left undisturbed the better 'it will grow."

In other Divisions, fires have prevented natural reproduction to a considerable extent, but the following testimony of Mr. Lely, Collecter of Surat, to the labours of the Department will be read with interest :—

"Some of the forests in the south of the district though small 'are pictures. In Mandvi Taluka the soil is inferior, but the De-'partment is there reclothing large tracts of land and vindicating 'itself as one of the most useful agencies of the country."

In the Central Circle report, too, there are some interesting remarks on natural reproduction :—

"The year under report was favourable to natural reproduc-'tion, owing to a plentiful and seasonable rainfall generally 'throughout the Central Circle. In the East Khandesh Division 'it was very refreshing to observe the myriads of young plants of 'teak and of other kinds of timber trees resulting from self-sown 'seeds which appeared in suitable soil, on the bank of the Aner 'river, and in fire-protected areas, in the Satpuda and other for-'ests. The Anjan (*Hardwickia binata*), which does not seed an-'nually or regularly, seeded during the year, and has given an 'abundant supply of young life in the Transpurna, the Raver, 'Savda, Yaval and other reserved forests where this valuable tree 'predominates. The stools of trees which were felled in the for-'ests of the Jamner Range and in the Satpudas have thrown up 'vigorous shoots with scarcely any failures."

There is nothing particular to be noted, on this subject, in the Southern Circle Report, but the Sind officers complain that the river bunds are seriously affecting reproduction. Mr. Hexton says :—

"There can be no doubt that the bunds prevent a vast amount 'of natural reproduction, and have rendered many of the once 'well-wooded areas quite useless for forest purposes. Take the 'country from Kashmor to Shewan on the right bank of the river, 'nearly the whole of this portion of Sind is cut off from the floods, 'the result being that the jungles are fast drying up, and unless 'some change takes place, there will soon be a scarcity of fuel even 'for domestic purposes."

The following remarks from the Northern Circle Report are interesting, as drawing attention to a minor produce industry, of which little is known outside Bombay:—

"Of the two trees, 'apta' (*Bauhinia racemosa*) and 'temb-'burni' (*Diospyros melanoxylon*), whose leaves are used as 'wrappers for cigarettes by the people generally, the latter has 'been so much damaged in the past during the process of plucking 'that it was considered desirable to put a stop altogether to the

'farming of its leaves, and in order to further improve its growth, 'mutilated specimens to be met within the coupes are no longer 'to be reserved as standards, as was the practice in former years, 'for the sake of its fruit. The tembhurni coppices fairly, and if 'the injured and deformed trees are properly cut and trimmed, 'and the leaves protected, it ought to yield good timber when it 'reaches the exploitable age. The main utility of the apta trees 'lies in its leaf, it being not valuable as timber. It is also very 'hardy, stands a good deal of knocking about, and does not suffer 'to the same extent as the tembhurni from harmful treatment 'The demand for its leaves is already fairly large, and there is a 'prospect of its increasing in proportion to the diminished supply 'of tembhurni leaves, and, therefore, its exploitation has to be 'restricted."

We are rather doubtful as regards the policy of trying to grow ebony wood rather than to exploit the same for the local uses of its leaves. The best Indian ebony is that of the South Indian *Diospyros Ebenum*, a tree which is by no means common even in the dry Carnatic evergreen forests which it affects, and the wood of *Diospyros Melanoxylon* and *tomentosa*, the common ebony trees of South and North India, respectively, gives so little real ebony, even when the trees are large and sound, that it may be doubted whether it is worth while to try and encourage them for the growth of the fancy wood. It might, perhaps, be better policy to reserve both 'apta' and 'tembhurni' among the coppice standards in order to allow of their being pollarded yearly for their leaves. This subject further suggests to us the question whence comes the ebony which is quoted in the English market as 'East Indian.' There is not much of it produced, and sold in the Madras Presidency, perhaps the bulk comes after all from the Bombay coast forests!

Artificial reproduction works for the filling of blanks in the forests seem to be much more successful in Bombay than in other provincess. In the Northern Circle 3,640 maunds of seed were sown by Forest Guards in one Division alone, and very extensive works seem to have been carried out in the Central Circle. On the works done by forest guards, Mr. Shuttleworth says :—

"The cultural operations undertaken by forest guards, as a 'part of their ordinary duties, cannot but have a marked effect 'upon the re-wooding of the country within the Central Circle. 'Each forest beat, (and all the forest areas in every division are 'divided into beats, so that not an acre in charge of the Forest 'Department is left outside a beat), is an unit of plantation ; so 'that reboisement is pushed on yearly in as many different localities 'spread over the face of the country, as there are forest guards in 'charge of forest-beats."

And we can only feel envious, as we said last year (Vol. XIX, p. 393), for our own experience of forest guards in several provinces is that not only do they not attend to such work, but that they *could* not consistent with the protection and supervision of an

unwieldy area. We hope the day may soon come when the increasing yield of the forests will make it possible to reduce the size of beats, so that each guard will have scarcely more to look after than has a French 'Garde forestier,' and like him can do most of the planting, cleaning and similar work in his charge. The returns in form 56 for the four Circles give the following work done, taking additions only :—

	Regular Plantations.		Cultural Works.	
	Area	Cost	Area	Cost
	A.	Rs.	A.	Rs.
Northern ...	438	807	2,851	1,747
Central ...	2,144	4,383	95,427	9,827
Southern ...	41	848	10	557
Sind ..	...	2,155	6,505	...
	2,623	8,193	104,793	12,131

though we do out pretend to understand the figures.

The Review of the Forest Reports by the Bombay Government is noticeable for its much more conciliatory tone than usual, and for the way in which it gives full credit to the Conservators for their work during the year. We have not received the review of the Government of India, so we will conclude with the following extract from the 'Pioneer' of September 13th regarding it :—

"Remembering the friction that once existed in the Bombay 'Presidency between the Forest officers and the Executive, the 'comments of the Government of India on the local Forest Admin-'istration Report for 1892-93 are pleasant reading. The able and 'exhaustive review of the Governor in Council is acknowledged, 'and it is added that "the harmony and good feeling which mark 'the relations between Revenue and Forest officers, and the praise 'bestowed by His Excelleney on officers in charge of forest circles, 'for the efficient manner in which they have discharged their 'duties, and on Revenue officers for the cordial assistance they 'have rendered, have been noted with satisfaction." We need not 'comment on this, beyond expressing the hope that the harmony 'thus established may endure, and that there is nothing behind 'the scenes likely to disturb it. As to the report itself, the figures 'show that only a small increase of Rs. 18,000 occurred in the net 'revenue from forests as compared with that of the previous year ;

'but the surplus was nearly Rs. 95,000 above that of the quin-'quennial average. Bombay gets now about 13¾ lakhs clear profit 'from its forests, and this sum is capable of expansion. A difficul-'ty has arisen in Sind, where the growing demand for fuel has 'been checked by the restriction of the productive forest area 'owing to the exclusion of flood-water from the Indus. The 'Government of India consider this a grave question, but note 'with approval that the difficulty is being met by the constitution 'of reserves in alluvial lands outside the influence of protective 'dams. Even this, however, may not prove sufficient, and it is 'suggested that irrigated plantations may be found to be necessary. 'The subject is one in which experts should be consulted without 'delay."

In reviewing the BURMA Reports, the Government of India say :—

"The chief administrative measures involving change were 'the division of Upper Burma into two circles ; the promulgation 'of a revised edition of rules under the Upper Burma Forest Re-'gulation, and their extension to parts of the country which had 'till then been exempted ; the enhancement of the royalty on 'timber extracted for trade purposes in the upper portion of the 'province ; and the inclusion of *kaungmhoo* (*Shorea stellata*) in the 'list of reserved trees."

And they comment on the financial results as being the best on record. These were, for the whole Province :—

	Rs.		
Revenue Financial year	56,60,001	Forest year	54,73,058
Expenditure " "	17,47,356	" "	18,18,480
Surplus " "	39,12,645	" "	36,54,578

showing what a valuable property the Burma forests are to the State.

The Local Government's Review give us the statistics of export of teak from Rangoon and Moulmein during the last 5 years in the following table :—

	FROM MOULMEIN.		FROM RANGOON		TOTAL.		
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Average value per ton.
		Rs.		Rs.		Rs.	Rs.
1888-89 ...	93,465	77,21,819	62,969	48,99,547	156,434	1,26,21,366	80·7
1889-90 ...	80,871	70,05,857	103,560	81,84,843	184,431	1,57,90,700	82·4
1890-91 ...	64,227	47,01,434	110,888	78,75,794	175,115	1,25,77,228	71·8
1891-92 ...	62,320	41,88,267	99,647	75,13,397	161,967	1,17,01,664	72·2
1892-93 ..	106,850	72,57,412	109,336	91,85,043	216,186	1,64,42,455	76·06

The Tenasserim Report begins with an account of the Circle, which we think quite worthy of reproduction as a short and concise piece of information. After noting that the Circle covers about 35,308 square miles, of which 941, square miles may be roughly reckoned as cultivated land; that there are 4 forest Divisions; and that there are 1,877 square miles of reserved forest with 148 square miles of fire-traced area, and 9,339 acres of regular and taungya teak plantations, he goes on:—

"The teak forests which form the most valueable portion of 'the State forest property lie all in the northern half of the circle.

'Teak, so far as has been observed, does not in Tenasserim 'extend much below the latitude of Yè, 15° 5'N; such stragglers 'of the species as are found further south being of poor growth, 'sickly, and ill-formed.

'In past years the teak forests on the Thaungyin, Salween, 'and Yunzalin rivers, and more especially those in the valley of 'the Ataran, were the sources from which the supplies of the 'famous "Moulmein teak" were drawn. But for years past the 'yield has deteriorated both in quantity and immeasurably in 'quality, the forests having been ruthlessly worked mostly under 'the pernicious lease system, which still lingers in the five unex-'pired leases now running in the Ataran valley.

'Besides teak, several other valuable woods, padauk (*pterocar-'pus*), kanyin (*Dipterocarpus lævis*), thingan (*Hopea odorata*), 'kaunghmu (*Shorea stellata*), pyinma (*Lagerstrœmia*), pyinkado '(*Xylia dolabriformis*), &c., are to be found in more or less 'abundance in Tenasserim, more specially in the southern forests, 'and until the teak forests under the State management and care 'now given to them shall have recuperated themselves, the forest 'outturn and revenue must, in the near future, depend largely on 'the introduction into the market of woods other than teak.

'One of the great wants in the circle is the want of good 'communications in the interior. Practically speaking the rivers '(many of which including the chief river, the Salween, are 'blocked by rapids) are the chief means of communication. Roads 'are few and far between; the extent of the roads made by the 'Public Works Department of the State is as yet small; and the 'country roads are mere jungle tracks leading from village to 'village, and liable to alteration, and even complete obliteration 'on the removal of a village-site.

'It is this want of easy rapid communication that makes the 'forest administration of the circle difficult, and retards in many 'ways the introduction of a more thorough supervision and 'management of the forests."

This account of the Circle shows that it is by no means an easy one to manage, and that good communications and commercial enterprise are required to bring into the market the splendid

timbers other than teak, of which there seem to be such a magnificent supply. Here seems to be the field for the development of the wood-paving trade which assuredly we, in India, have not done near enough to take advantage of. To an outsider, it would almost seem that the wants of the Circle in the way of communications might be met, at any rate on these rivers where there are good stores of suitable timber, by improvement of the navigation of the rapids by means of small locks and canals in some places, and in others by portages with short lengths of portable tramway. That a market ought to be got and can be got by perseverance for such timbers as 'padouk' and 'pyinkado' we feel quite sure, but rates will have to be cheap and profits small at first, for there are few things so difficult as to get new products into the market and to get new timbers into regular trade.

Major Bingham's remarks on a curious fact in regard to the natural reproduction of teak are worth quoting. He says :—

"As bearing on the natural reproduction of teak it is a note-'worthy fact that there are many localities in Tenasserim where 'for some unknown reason teak seed rarely matures, and seed 'locally collected for sowing in taungya teak plantations is very 'often entirely worthless. For the last two years the supply of 'seed for taungya teak cultivation in this circle has been imported 'largely from the Pegu circle, and contrary to what was anticipat-'ed the results are far better than can be obtained with locally 'collected seed."

Taungya teak cultivation in Tenasserim seems to cost about Rs. 6-8 per acre, and in Pegu about Rs. 8-8 per acre.

The Pegu Circle extends over an area of 38,020 square miles of which 4,180 are under cultivation and 3,912 are Reserved Forest. There are seven Forest Divisions with a Working Plan Division and an Agency Division.

Mr. Carter's account of natural reproduction in the drier forests where bamboo abounds are interesting :—

"In the drier forests where the prevalent bamboo is myinwá '(*Dendrocalamus strictus*) which flowers in patches almost every 'year, the natural reproduction of teak and other species is fairly 'good, and in such forests fire-protection not only improves the 'forest growth generally, but furthers the natural reproduction of 'teak. In the moister forests where the prevalent bamboos are 'tinwa (*Cephalostachyum pergracile*), and kyathaung (*Bambusa* '*polymorpha*) which do not flower spasmodically, natural produc-'tion is confined to gaps in the bamboo canopy which are not of 'frequent occurrence. In this forest fire-protection improves the 'general forest growth, and has a marked effect on the distribution 'of the water-supply, but it is not favourable to the natural repro-'duction of teak. The probable effect of continued fire-protection 'would be to increase the area of evergreen forest in which teak 'would not find a place if the forester trusted to natural reproduc-'tion alone.

'In the Kôn-Bilin forest we have a considerable area on which 'the tinwa flowered six years ago. A part of this area is protect-'ed from fire, and inside the fire-trace not a single seedling of any 'other species than bamboo can be found, while outside the fire-'trace such seedlings are very few and far between. In the Pada 'forests of the Shwegyin division, in the area on which the tinwa 'flowered at the same time as in the Kôn-Bilin, a fairly good 'natural roproduction of teak has been noticed. More recently, in '1891, the kyathaung bamboo flowered over a large area of the 'Western division. The Divisional Officer states that the young 'growth of bamboo is 3 feet high, and is silent as regards seedlings 'other than bamboo. In the Toungoo division there is a fair 'reproduction of cutch over a limited area from which the mature 'cutch trees were removed four years ago."

There is scarcely any question of sylviculture in India or Burma so difficult as that of the reproduction of timber trees in bamboo areas, whether it be of teak in Burma or of Sál and other valuable trees in Bengal and elsewhere. The following remarks of the Pegu Conservator on the subject of the Europe market for teak deserve reproduction.

"The course of the Europe markets has been one of disap-'pointment to shippers during the period under review. Prices 'which ruled at about £10-10 to £11 in the early months of '1892, declined to £9 to £10. The demand for teak for ship-'building and for railway carriage construction was contracted. 'Planks were sold at from £9 to £10-10. The continental demand 'for teak has again increased, being fully 33 per cent. of the 'shipments to Europe as compared with 25 per cent. in the pre-'vious year. France bought largely for naval purposes, and there 'was the usual demand for Germany, Italy, Holland, Belgium, 'and Spain. There was no increase in the quantity of teak 'shipped to Europe from Siam, although the floating season 1892-'93 was a favourable one, and fully 70,000 logs reached Bangkok 'during the year.

'The advance recorded in the last report was not of long 'duration, and timber not moving off freely in the selling markets, 'prices have declined again to about Rs. 65 to Rs. 70 for selected 'Indian squares and Rs. 55 to Rs. 60 for an inferior class of 'timber."

The Upper Burma forests were, during 1892-93, divided into two Circles, Eastern and Western; the former containing at the close of the year 1,447 square miles and the latter, 822 square miles of Reserved Forest, with large areas of Protected Forest in addition.

One of the most interesting matters treated in the Eastern Circle Report is that of the difficulty of preventing illicit cutch boiling. Mr. Oliver says, in regard to this :—

"Sixty-nine cases were in connection with illicit cutch boil-
'ing and of these 49 out of the 54 that were taken into court re-
'sulted in convictions. The protection afforded to cutch during the
'year has been altogether inadequate. At the beginning of the
'season, in order to prevent the forests from being overworked,
'the issue of licenses was restricted to a limited number of cauldrons
'fixed for each district approximately in accordance with its cap-
'abilities. This led interested persons to investigate the law in
'the matter, and it soon became generally known that the Forest
'Department had no power to protect trees on land not at the dis-
'posal of Government. Owing to the growing scarcity of wood
'for boiling, the demand increased considerably, and people who had
'not sufficent cutch to make it worth while to boil it themselves,
'found a ready market at Rs. 3 per cart-load for the trees growing
'round their fields; not only have trees of all sizes been felled,
'but the stumps and roots have also been extracted, thus reducing
'the possibility of reproduction to a minimum. Cutch is conse-
'quently being fast exterminated in private lands. A further
'result of a better understanding of the Forest Regulations has
'been the manufacture in considerable quantities for the adultera-
'tion of cutch of *thansha* (decoction of *Terminalia Oliveri*) from
'trees grown on private lands."

"The destruction of cutch trees would not have mattered so
'much if it had been confined to *bonâ fide* private property, but in
'many places, particularly in the Meiktila, Yamethin, and Shwebo
'districts, persons claimed as private property all land that had at
'any time been cultivated permanently or temporarily either by
'themselves or their ancestors together with the adjacent forest
'and proceeded to boil cutch on it. Land of this class includes
'practically the whole of the cutch forests in these districts. Some
'of it is no doubt private property, but to the greater part the
'claimants can prove no legal title. The Forest Department has,
'however, before it can interfere, to show in each case that the
'land is not private property, and it will be easily understood that
'with the weak staff available it has not been possible to cope with
'the difficulty, especially as in the cases that were successfully
'prosecuted, the small fines inflicted (which ranged from Re. 1 to
'Rs 30) have had no deterrent effect. Reservation of cutch tracts
'will no doubt be the best remedy for the present state of things,
'but until the controlling staff is strengthened progress in this
'direction must be slow."

And there are very similar remarks to be found in Mr. Home's report on the Western Circle.

On the subject of natural reproduction, the Western Circle report has some interesting information which we reproduce.

"The general purport of Divisional Officers' notes on this 'subject is that reproduction of teak, cutch, and pyinkado (*Xylia 'dolabriformis*) is naturally good, but that annual fires do not of-'ten allow the seedlings to survive over one season. This is only 'as must be expected, and until fire-protection is systematically 'carried out no practical improvement in this respect can be 'hoped for.

"The wabo (*Dendrocalamus Hamiltonii*) is reported to have 'flowered over extensive areas in the Nantainkwin forests in the 'Upper Chindwin, but it is too soon to judge with what effect as 'regards the reproduction of teak. The myinwa (*Dendrocalamus 'strictus*) was noticed to have flowered over considerable areas in 'the Upper Myittha near Anyaban and in the Sanni drainage; 'these areas, which were visited by the Conservator, were found 'to be one mass of fine Cutch seedlings, which will be destroyed al-'most entirely next season by fire; this bamboo has hitherto been 'observed to flower over small areas only annually, but the flower-'ing over the localities named was more general than usual. The 'pyinkado flowered very freely in the Upper Chindwin.

We have read all four reports with great interest, and have endeavoured to select for reproduction the most interesting points, but there are many other matters of importance and interest, and for these we can only refer our readers to the Reports themselves.

Annual Administration Report of the Agricultural Department, Central Provinces, for 1892-93.

The only matters in this Report which are connected with the Forest Department are the references to 'Fodder Reserves' contained in paras. 18—19, which we reproduce as being the sort of thing which leads to unpleasantnesses and difficulties between Departments.

Para. 18 shows us that something in the nature of an 'opposition shop' is being started in the Central Provinces, that the Director of Agriculture is not satisfied with the ordinary professional agency, and that he is starting reserves of his own, and is going in for "strict conservation" with no "desire to gain an income for Government." It is just possible that the financial authorities of Government may not look upon this generosity in quite the same light: with the rupee at only a little over a

shilling, deficits to be met, economies in every branch of the administration to be carried out, and taxation of the least unpleasant kind to be provided, it is not improbable that Mr. Fuller's philanthropy may not be quite so acceptable as he seems to think it will be. His little reflection on the income-gaining propensities of forest officers is not worthy of the pen of a Head of Department.

We have to work, practically and financially, on the lines which Government lays down. It cannot say to us, however, "we expect so many lakhs of rupees surplus revenue, but you must not charge for forest produce." As forest officers only, it is all one to us if the Government gives away *all* its produce *gratis*, provided that it does not make us accept the responsibility for doing so, and provided that we are permitted to manage the forest estates with a due regard to the maintenance and improvement of the capital. We are the servants of Government just like Mr. Fuller, and the Chief Commissioner has as fully the authority to regulate the proceedings of the forest officers, as he has over agricultural experiments. The narrow-minded view of the object of the Forest Department taken in para. 19 is, however, not likely to commend itself to any statesman, who can understand that the Department has other clients than agriculture; and that there could not be a worse policy than to manage it solely in the interest of one. We quite think that the authorities should (and probably do) consult the Director of Agriculture on questions relating to the Department, just as they would consult the Chief Engineer on matters where Public Works interests were concerned, or the Accountant General on questions of finance. What we want to see and what we are sure that our Government, Imperial or Local, really desires, is a complete '*entente cordiale*' between all its officers, of whatever Department they may be; and we think it a great pity that such statements as those we quote should find place in a Government Report :—

"The acquisition has been completed of eleven plots of uncul-
'turable land in the densely populated area of the Raipur and
'Bilaspur districts, to be managed as Fodder Reserves in the in-
'terests of the people. In regard to the Fuel and Fodder Reser-
'ves which were established in the Sambalpur district at its recent
're-settlement the Deputy Commissioner writes that they are
'managed in the Revenue Department by Patwaris nnd Inspectors,
'and are improving in condition. Stricter conservation is to be
'enforced, but I trust that it will not be influenced by any desire
'to gain an income for Government.

'Experiments undertaken in this Department on the barren
'range of trap hills near Nagpur to ascertain whether jungle
'growth could be assisted by sowing seed, have so far resulted in
'failure, but will be continued during the present year on rather
'different lines.

"The term "Fuel and Fodder Reserves" customarily refers 'only to a few small plots of land which have been specially taken 'up during the past six years, but as a matter of fact the greater 'portion of the Government Forest Reserves—covering nearly '20,000 square miles of country—is of practical value as subsidiary 'to agriculture and not as a source of commercial products. The 'sale of timber constitutes indeed quite a minor item in the re-'venue of the Forest Department, which represents in great part 'money paid by the agricultural population for services or supplies 'connected with their cultivation. My long acquaintance with the 'rural circumstances of the Provinces may perhaps be held to justify 'the expression of my opinion that the management of the Forest 'Department too often ignores the essential connection between 'its lands and those under cultivation, and follows lines which, 'however efficacious in producing revenue, are calculated to cramp, 'not to develop, the agricultural resources of these Provinces. 'It would be out of place here to instance in detail cases with which 'I have to support this view. The question is one with which I 'have had no official connection, and the representations on parti-'cular cases of hardship which I have from time to time submitted 'to the Forest Department have naturally suffered from the ap-'pearance of gratuitous criticism. I trust that I may be pardoned 'for venturing to record here that, in my judgment, more is re-'quired to ensure that questions of Forest management and Forest 'rates which are connected with the practices and requirements 'of the agricultural population, are not decided without full and 'careful consideration on the agricultural side, and that the Direc-'tor of Agriculture should be formally authorized to institute pro-'ceedings for the modification of arrangements which are prejudi-'cial to agricultural development, and should be given a voice in 'the introduction of changes, whether of system or rates, which 'will affect the circumstances of the agricultural population."

Administration Reports of the Madras Government Museum and Nilgiri Parks and Gardens, for 1893-94.

The first of these reports is an interesting and well-written one, evidently written by the Superintendent himself, and not merely compiled in conventional style by the office clerks. It is probable that the Madras Museum is the best managed institution of the kind in India; it is somewhat crowded, but is bright and pleasant, and in that way contrasts very favourably with the rather dreary galleries at Calcutta. But in the Report there is, naturally, not much to interest us professionally, except that the Economic Museum includes forest products, and has made a good beginning. The Nilgiri Botanical Gardens' report is also

interesting, and there are notes on some forest products, which are of interest. The tollowing regarding the *Cassia auriculata* shrub shows that the Superintendent has not heard of its having been cultivated successfully in the plantations on poor laterite soil near Rajampet in the Cuddapah District :—

"*Cassia auriculata.*—Messrs. Cooper, Allen and Co., of 'Cawnpore, asked for information respecting the cultivation of the '*Cassia auriculata*, and were told that, so far as was known in this 'department, the plant was never cultivated, but was obtained as a 'minor forest product; but that if they wished to cultivate it, it 'was believed that it would not need irrigation, as in a wild state 'it grows in hot dry places. It was also pointed out to Messrs. 'Cooper, Allen and Co. that if they undertook its cultivation, they 'should allow it to grow for several years before barking the 'shrubs; as Mr. Hooper's analyses had conclusively proved that 'the bark taken from old stems was many times richer in tanning 'than that taken from young stems or branches."

It is not very easy to start, but we believe that when once started it might be cultivated as a crop quite easily, though perhaps the winter at Cawnpore might prove a little too cold for it. We would recommend trying it sown broadcost on well ploughed land, the seed having been previously well-soaked to assist germination.

It is reported that blue-gum oil is now regularly prepared by private firms who sell it wholesale at from Rs. 2-4 to 2-8 per lb.

The *Ceara* and *Castilloa* rubber trees at Barliyar were again tapped, but with very poor results, though what was obtained proved to be of very good quality.

VI.—EXTRACTS, NOTES AND QUERIES

The New System of Coupes in the C. P.

We have received from Mr. G. F. Taylor a photograph showing one of the new coupes with the standards left as reserves. The picture gives a good idea of the style of the operations which have recently been started, and which will do much to improve the forests as well as to provide material for the use of the country. The number of standards left is 60, and the photograph shews these with a broad mark of white paint around them. Our acknowledgments are due to Mr. Taylor for his interesting communication.

Seeding of Forest Trees.

Pterocarpus Marsupium is reported to be seeding well all over the Palni Hills, Madura District, Madras, this year. The seed is now well developed, and promises a good crop in October and November.

Bamboo Seeding in Bengal.

Mr. F. Trafford, Assistant Conservator of Forests, Tista Division, Bengal, writes to say that the 'Tama' bamboo (*Dendrocalamus Hamiltonii*) is flowering abundantly this year, and that large quantities of the seed can be collected, if required.

Foresters as Cyclists in France.

We notice in a recent number of *Revue des Eaux et Forêts* that a circular has been issued to all Conservators of Forests in France from head-quarters, informing them that in future Forest Officers up to and including 'Inspecteurs' are to be exempt from the velocipede tax imposed by the law of 28th April 1893. The Resolution requires that Conservators should satisfy themselves that the concession is not abused, and to this effect it has to be certified that the possessor of the velocipede uses it in the public service.

It is stated that experience has shown how extremely useful these machines are to members of the Forest Service by whom they are very largely used. That this would appear to be the case is also indicated by an article of the Resolution, which provides for the exemption of departmental velocipedes also when in use by members of the department.

It is not stated whether the term velocipede includes the tricycle or not; we trust it does, as this will 'no doubt' be a matter of interest to some of the less active members of the department.

The Restoration of Scenery.

The preservation of scenery, by making "natural pictures" a kind of public property, to be preserved and kept for the æsthetic enjoyment of the people, just as paintings are purchased and preserved for the same purpose, has more than once been advocated in the *Spectator*. Professor W. R. Fisher, in communicating to the *Daily Chronicle* some observations made in the industrial districts of the Belgian Ardennes, and subsequently in the Black Country of our Midlands, "goes one better." He sees his way

to a plan for the restoration of scenery ; and unlike the restorers of "genuine old masters," who made a mystery of their doubtful craft, he gives full details of his experience in both countries, and his conclusions as to the treatment necessary. It was when staying at Château Mirwart, in Belgium, that he first conceived the idea of "restoring" the Black Country. He saw vigorous ash and sycamore trees growing on heaps of glassy slag from an abandoned iron-furnace. That kind of slag is almost the least promising material for woodland soil which can be imagined. It is hard as glass, breaks into shiny lumps, like the "rock" sold on sweetstuff-stalls in the streets, and has very seldom been put to any useful purpose. At Middlesbrough, where, on the shallow, muddy, dull banks of the Tees estuary, there was never any "scenery" worth looking at at all—the Black Country of Cleveland is hardly less picturesque than the sour flat fields which once fringed the the ugly estuary—they "dumped" hundreds of thousand of tons of slag along the banks, and gained a deeper river and a firm bank and quay. But it does not grow trees yet. Probably it never will. But as the trees grew in the slag, or among the slag, in the Ardennes, the idea occurred to Professor Fisher that the great "spoil banks," or heaps of all sorts of soil dug out of the pits before the coal or iron is reached, might just as well be planted with trees in England. If they were set with the quickly growing kinds used for mine props, the enterprise might be profitable as well as picturesque. The soil in these mounds is by no means of the forbidding character which appears on the surface. The deeper the mine, the more rocky, as a rule, is the debris extracted ; but this, which is taken out last, and scattered on the surface, often conceals thousands of tons of good soil piled below. There is, therefore, no reason why the colliery and ironstone countries should not be covered with wooded mounds, wherever a worked-out or disused pit now marks the surface with an ugly and disfiguring scar. Scotch fir, a rapid-growing, hardy, and self-sowing species, is clearly the tree for the purpose. Moreover, it is in great demand for prop timber, and the estimate of 70,000 tons imported for that purpose quoted by Professor Fisher, is probably far below the mark. Some such effort at restoration of ruined scenery seems to be entertained in a different quarter. From the Welsh coal-districts there comes a separate and independent demand for "afforesting," partly with a view to a supply of mine-timber. Mr. Lloyd-George and other Welsh members drew attention in the discussion on Supply to the need of replanting Crown lands in Wales with timber, the present destruction of which made it necessary to buy mining-props in France. Sir John Hibbert was able to reply that their wishes had the sympathy of a Commissioner of Woods and Forests, who was then engaged in a tour, in order to discover how far the project could be made to pay, and whether the local feeling was

in favour of planting. In the true Black Country, Professor Fisher found conditions somewhat different from those generally seen in a country whose amenity has been destroyed by manufacture. The cause of the early destruction of the scenery, and the early wealth of the Black Country, was the wonderful coal seam which ran beneath it, and its nearness to the surface. In one of the largest mining enterprises of the last few years shafts of twelve hundred yards deep were sunk to reach the Barnsley seam of 9½ ft. thick. In 1850 a seam *thirty feet thick* ran so close beneath the surface in parts of Staffordshire and Worcestershire that, according to Professor Fisher, nearly every one who had land above it dug an independent shaft, and the débris from these numberless shafts has spread over many thousands of acres of land, rendering the surface too uneven for agriculture. "Here and there, in depressions," writes Professor Fisher, "I found a small vegetable garden and orchard, but the rest of the land consists of heaps of shale, which has disintegrated into a clayey loam, and is covered with a coarse growth of grass, presumably used for sheep pasture, though I saw no sheep on it. I was told that it cost about £100 an acre to level this land, and the present state of agriculture in England would not warrant this expenditure. What it would grow, and grow well, is a crop of trees ; but the obvious difficulty in the way of such a proposal lies in the danger to the growing trees from the noxious fumes of the surviving manufactories. In order to find out how far this was a still-existing danger in the Black Country, Professor Fisher invited Mr. Harbord, the Chemical Analyst to the Government of India at Cooper's Hill, to accompany him to Birmingham, Dudley, Bilston, and the neigbourhood of Wolverhampton. They found that the waste tract which has been described, on which there are now no furnaces, and on which the pits have been closed for years—one of those awful instances of a bit of "used-up England," which suggest to some minds a time when the populous North may become one huge burnt-out cinder-heap—was remote enough from the manufactories both of Wolverhampton and of Bilston, for there to be no danger to trees from acid fumes. Moreover, the the actual number of furnaces at work is not more than one-half of those in blast thirty years ago, and these are better constructed and give out less smoke. The presence of trees is witness to this. "There is fine growth of ash and sycamore and poplar in Dudley 'Park, on the verge of the Black Country, to the west of the Earl 'of Dudley's extensive iron and steel works ; there are fine syca-'more, ash, beech and even Scotch fir-trees, growing in some private 'grounds, although it is well known that Scotch fir and beech do not 'thrive when exposed to acid fumes." Professor Fisher's conclusion is that there is not sufficient smoke in the Black Country to injure trees, and that the waste land and old pitshafts might be planted, and the hideous scarred country turned into a forest, "if Government or local authorities would support such a measure."

It is not often that such practical proposals result from a "sentimental journey" through a factory-ruined district. A far more usual course is to abuse or deplore the establishment of the factories themselves, which are the result of economic needs that must be stronger than æsthetic antipathies. There is no reason to doubt that in the case of parts of the Black Country, scenery can be restored on the lines suggested by Professor Fisher, and the experiment is as well worth considering by the local governing bodies of the wealthy Midland towns as the project of re-afforesting the Welsh Crown lands by the "sympathetic Commissioner," from whose good offices Sir John Hibbert expects so much. But there are districts in which manufactures are still carried on in such a manner and of such a kind as are incompatible with any restoration of scenery, even supposing it were worth living in the vicinity, were the landscape the finest which could be seen. Take, for instance, that "chemical" district west of Manchester, of which Widnes and St. Helens are the commercial centres. In this scene of unrivalled British enterprise, the ground is like a dead sea-shore of alkali waste, the air smells horribly all day and all night, trees die, eyes smart and lips are dry and cracked from chemical fumes, and soda, glass bottles, and pills in millions are the result to civilisation. They will go on being made, and the trees will go on dying, until the world has enough soda, glass bottles, and pills, or till it does not pay to make them. In Jarrow-on-Tyne, the other centre of the chemical industry, the fumes killed all the trees on the hilltops like a frost, but spared those in the valleys. It is said that they too are dying. The river is fringed for miles with old-established chemical works, dating in many cases from a time when waste and carelessness in manufacture were unchecked by the invention of improved processes abroad, the manufacture of chemicals was conducted at a minimum of profit to the owner, with a maximum of injury to vegetable life, and interference with human comfort. Improved methods of manufacture, which turn the noxious "waste products" into something useful, are the great protection to trees and vegetation, and such improvements are being introduced at Jarrow. But the scenery of Tyneside is not yet ripe for restoration; and if our fiery districts are cooling from the centre, as seems probable, the Midlands seem the natural and best locality for an experiment in the restoration of scenery.—(*Spectator, August 25th, 1894*).

VII.—TIMBER & PRODUCE TRADE.

Churchill and Sim's Circular.

September 5th, 1894.

EAST INDIA TEAK.—The deliveries for the first eight months of the year are 7,754 loads against 8,783 loads in the same period of 1893, while for August they came out at 817 loads against 1,157 loads in August, 1893. The London Stock continues very moderate, and prices tend to improve. They would do so much more markedly but for the figures of the floating supply and the number of slips chartered to load. This prospective supply promises to meet, however, with a sufficiently widespread and general demand to prevent the probability of any undue proportion of it pressing very severely on any one market.

RED-WOOD.—Is in very limited demand, although stock is small.

SATINWOOD.—Plain wood is dull of sale, but figury logs are in good demand.

EBONY.—There is more enquiry, and really good logs bring satisfactory prices.

PRICE CURRENT.

Indian Teak	per load	£10.	to	£16
Satinwood	per foot superficial	6d.	to	12d.
Rosewood	„ ton	£5.	to	£8.
Ebony	„ ton	£6.	to	£8

MARKET RATES OF PRODUCTS.

Tropical Agriculturist, September, 1894.

Cardamoms	per lb.	2s.	to	2s. 6d.
Croton seeds	per cwt.	20s.	to	27s. 6d.
Cutch	„	20s.	to	32s.
Gum Arabic, Madras	„	15s.	to	30s.
Gum Kino	„	£15	to	£18
Indian Rubber, Assam,	per lb.	1s. 7d.	to	2s. 2d.
„ Burma	„	1s. 7d.	to	2s.
Myrabolams, Bombay,	per cwt.	7s. 6d.	to	9s. 3d.
„ „	„	3s. 6d.	to	4s. 3d.
„ Godavari	„	6s.	to	6s. 9d.
Nux Vomica, good	„	6s.	to	10s.
Orchella, Ceylon	„	15s.	to	22s.
Redwood	per ton	£3. 10s.	to	£4
Sandalwood, logs	„	£35	to	£55
„ chips	„	£9	to	£30

X.—EXTRACTS FROM OFFICIAL GAZETTES.

1.—Gazette of India.

31st August, 1894.—No. 848-F.—Privilege leave for one month and twenty-nine days, under Articles 277 and 291 of the Civil Service Regulations, is granted to Mr. C. Bagshawe, Conservator of Forests, 1st grade, Berar, with effect from the 27th August, 1894.

Mr. H. Calthrop, Deputy Conservator, 4th (officiating 3rd) grade, Berar is appointed to hold charge of the Berar Forest Circle during Mr. Bagshawe's absence, or until further order.

2.—Madras Gazette.

25th August 1894.—Twenty days' privilege leave granted to S. Eggia Narayana Sastri, Forest Ranger, Anantapur district, in office order No. 38 of 1894-95, is hereby cancelled.

2nd September, 1894.—The transfer of Mr. S. C. Moss, Extra Assistant Conservator, to South Canara, is hereby cancelled.

6th September, 1894.—No. 434.—Mr. H. F. A. Wood, Assistant Conservator of Forests, Cuddapah, is granted examination leave for three months, with effect from or after the 25th September 1894, under para. 51 of the Forest Department Code.

10th September, 1894.—To Ranger M. Jambunada Sastri leave on medical certificate, up to 4th September 1894, in continuation of the leave notified at page 918, Part II, of the *Fort St. George Gazette*, dated 12th June, 1894.

To Ranger P. Venkatakrishnama Naidu leave for two months, from 25th August 1894, under Article 369 of the Civil Service Regulations.

17th September, 1894.—To Ranger A. P. Ramachendra Mudaliar for one month, from 8th September, 1894, under Article 291 of the Civil Service Regulations.

18th September, 1894.—M. Jambunatha Sastri, Ranger, 4th grade, is transferred from Trichinopoly to Salem District, on relief by Ranger Ramachendra Mudaliar.

19th September, 1894.—No. 463.—Mr. C. E. Brasier, District Forest Officer, Salem, is granted privilege leave for one day, in addition to two months and twenty days already granted to him in the Notification No. 193, dated 24th April 1894, published at page 499, Part I, of the *Fort St. George Gazette* of 1st May, 1894.

3.—Bombay Gazette.

19th September, 1894.—No. 7788.—Mr. G. A. Hight, Deputy Conservator of Forests, 2nd grade, has been allowed by Her Majesty's Secretary of State for India to return to duty within the period of his leave.

25th September, 1894.—Messrs. W. F. D. Fisher, Assistant Conservator of Forests, and G. A. Hight, Deputy Conservator of Forests, respectively delivered over and received charge of the Divisional Forest Office of Nasik on the 18th instant, before office hours.

Mr. J. H. Clabby, Extra Assistant Conservator of Forests, 3rd grade, on his return from leave to Europe, reported himself for duty on the 25th instant, before office hours, and has been attached to the office of the Conservator of Forests, Central Circle, temporarily.

4.—BENGAL GAZETTE.

30*th August*, 1894.—No. 4454.—Mr. C. A. G. Lillingston, Deputy Conservator of Forests and Personal Assistant to the Conservator of Forests, Bengal, held charge of the Tista Forest Division from the afternoon of the 4th to the forenoon of the 18th August 1894, in addition to his own duties.

Mr. F. Trafford, Assistant Conservator of Forests, is appointed to hold charge of the Tista Forest Division from the date of his relieving Mr. C. A. G. Lillingston and during the absence, on leave, of Mr. H. D. D. French, or until further orders.

15*th September*, 1894.—No. 4639.—Mr. E. P. Stebbing, Assistant Conservator of Forests, attached to the Singhbhum Forest Division, is granted two months' examination leave, under Section 69 of the Forest Department Code, with effect from the 8th September 1894, or from any subsequent date on which he may avail himself of it.

5.—N.-W. P. AND OUDH GAZETTE.

18*th September*, 1894.—No. 3036.—The undermentioned officers has been granted by Her Majesty's Secretary of State for India permission to return to duty :—

Name.	Service.	Appointment.	Date on which permitted to return.
Mr. N. Hearle ...	Forest	Deputy Conservator of Forests.	Within period of leave.

18*th September*, 1894.—No. 3035.—The undermentioned officers has been granted by Her Majesty's Secretary of State for India extension of leave :—

Name.	Service.	Appointment.	Period and nature of leave.
Mr. N. Hearle ...	Forest	Deputy Conservator of Forests.	One week's furlough.

22*nd September*, 1894.—No. 3070.—Mr. L. Mercer, Deputy Conservator of Forests, on return from furlough, to the charge of the Gonda Forest Division of the Oudh Circle.

22*nd September*, 1894.—No. 3071.—Lala Har Swarup, Extra Assisant Conservator of Forests, in charge of the Gonda Forest Division of the Oudh Circle, on being relieved by Mr. L. Mercer, is placed on special duty in the Kheri and Bahraich Forest Divisions of the same circle.

22nd September, 1894.—No. 3123 —The undermentioned officer has been granted by Her Majesty's Secretary of State for India permission to return to duty :—

Name.	Service.	Appointment.	Date on which permitted to return.
Mr. L. Mercer ...	Forest	Deputy Conservator of Forests.	Within period of leave.

28th September, 1894.—No 3132.—Mr. A. P. Grenfell, Officiating Deputy Conservator of Forests, on return from leave, to the charge of the Dehra Dun Forest Division of the School Circle

28th September, 1894.—No. 3133.—Mr. H. G. Billson, Assistant Conservator of Forests, in charge of the Dehra Dun Forest Division of the School Circle, on being relieved by Mr. A. P. Grenfell, to be attached to that Division

6.—PUNJAB GAZETTE.

31st August, 1894.—No. 440.—Consequent on the return of Mr. P. H. Clutterbnck, Assistant Conservator of Forests, 1st grade, from special leave, the following changes will have effect from the 15th August 1894 :—

Mr. P.H. Clutterbuck, Assistant Conservator of Forests, 1st grade, to officiate as Deputy Conservator of Forests, 4th grade.

Mr E. M. Coventry, Officiating Deputy Conservator of Forests, 4th grade (on privilege leave), to Officiating Assistant Conservator of Forests, 1st grade.

22nd September, 1894. —No. 475.—Mr. A. L. McIntire, Deputy Conservator of Forests, Punjab, is granted furlough for seventeen months, under Article 340 (*b*) of the Civil Service Regulations, with effect from the 15th May, 1895, or such subsequent date as he may avail himself of it.

7.—CENTRAL PROVINCES GAZETTE.

29th August, 1894 —No. 1883.—Mr. J. J. Hobday, Extra-Assistant Conservator of Forests, Sambalpur, availed himself, on the afternoon of the 18th instant, of the three months' privilege leave granted him by Order No. 3539. dated the 9th instant, making over charge of his duties to the Deputy Commissioner of Sambalpur.

31st August. 1894.—No. 3935.—Mr. P. H. Clutterbuck, Assistant Conservator of Forests, reported his arrival in Bombay on the forenoon of the 15th idem, on return from the leave granted him by Order No. 1132, dated the 6th March last.

The unexpired portion of his leave is hereby cancelled.

4th September, 1894.—No. 3982.—With reference to Order No. 3305, dated the 25th July 1894, Mr. P. H. Clutterbuck, Assistant Conservator of Forests, assumed charge of the Chhindwara Forest Division from Mr. W. G. Gilmore, Forest Ranger, on the forenoon of the 21st August.

12th September, 1894.—No. 4070.—Privilege leave for one month, under Article 291 of the Civil Service Regulations, is granted to Mr. H. Moore, Deputy Conservator of Forests, Betul, with effect from the 1st instant, or the subsequent date on which he may avail himself of it.

12th September, 1894.—No. 5071.—Mr. S. G. Paranjpe, Extra-Assistant Conservator of Forests and Working-Plans Assistant, Mandla, is posted to the charge of the Betul Forest Division, during the absence of Mr. Moore on privilege leave or until further orders.

8.—BURMA GAZETTE.

27th August, 1894.—No. 329.—Mr. F. Ryan, Extra Assistant Conservator of Forests, 4th grade, on probation, is confirmed in his appointment, with effect from the 4th June, 1894.

27th August, 1894.—No. 330.—In exercise of the power conferred by Section 2 of the Upper Burma Forest Regulation, 1817, and Section 3 of the Burma Forest Act 1881, the Chief Commissioner appoints the following Extra Assistant Conservators of Forests to discharge the functions of a Forest Officer and to exercise all the powers conferred on Sub-Assistant Conservators by the rules hitherto made under the enactments in question :—

Mr. C. S. Rogers. | Mr. D. H. Allan.

27th August, 1894.—No. 331.—Mr. C. S. Rogers, Extra Assistant Conservator of Forests, Ruby Mines subdivision, is posted to the charge of the Mongmit subdivision, Katha Forest division, in addition to his other duties, with effect from the 10th July, 1894.

5th September, 1894.—No. 339.—Under the provisions of Article 291 of the Civil Service Regulations, privilege leave for one month is granted to Mr. C. W. Allan, Extra Assistant Conservator of Forests, with effect from the 15th September 1894, or the subsequent date on which he may avail himself of it.

6th September, 1894.—No. 345.—The following postings are ordered :—

Mr. C. Ingram, Extra Assistant Conservator of Forests, on his return from leave, to the charge of the Shwegyin Forest Division, Mr. J. Messer, Assistant Conservator of Forests, from the Shwegyin Division to Rangoon, as Personal Assistant to Conservator, Pegu Forest Circle.

4th September, 1894.—No. 337.—The following postings are ordered :—

Mr. A. Weston, Deputy Conservator of Forests, on the his return from leave, to the charge of the Kado Forest division.

Mr. T. H. Aplin, Deputy Conservator of Forests, from Moulmein to the charge of the Lower Chindwin Forest division.

10th September, 1884.—No. 7.—Mr. T. H. Aplin, Deputy Conservator of Forests, made over, and Mr. A. Weston, Deputy Conservator of Forests, received charge of, the Kado division on the afternoon of the 8th September 1894.

10th September, 1894.—No. 346.—On being relieved by Mr. W.F.L. Tottenham, Mr. H. Carter, officiating Deputy Conservator of Forests is transferred from Pegu to the charge of the Working Plans division.

11th September, 1894.—No. 348.—The Chief Commissioner directs that the Western Forest division shall be divided into two divisions, to be called respectively the Henzada-Thongwa Forest division, with headquarters at Henzada, and the Bassein-Myaungmya Forest division, with headquarters at Bassein.

The local limits of the Henzada-Thongwa Forest division shall be those of the Henzada and Thongwa districts. The local limits of the Bassein-Myaungmya Forest division shall be those of the Bassein and Myaungmya districts.

No. 349.—Mr. H. B. Anthony, Deputy Conservator of Forests, is posted to the charge of the Henzada Thongwa Forest Division.

No. 350.—Mr. H. B. Ward, Deputy Conservator of Forests, is posted to the charge of the Bassein-Myaungmya Forest Division.

No. 352.—Under the provisions of Article 291 of the Civil Service Regulations, privilege leave for two months and 15 days is granted to Mr. R. M. Kavanagh, Extra Assistant Conservator of Forests, with effect from the date on which he may avail himself of it.

13th September, 1894.—No. 41.—With reference to Revenue Department Notification No. 346, dated the 10th September 1894, Mr. H Carter, Deputy Conservator of Forests, resumed charge of the Working Plans Division on the forenoon of the 11th September 1894.

14th September, 1894.—No. 358.—The following postings and transfers are ordered in the Forest Department :—

Mr. G. Q. Corbett, Deputy Conservator of Forests, on return from leave, to the charge of the Toungoo Forest division.

Mr. H. N. Thompson, Assistant Conservator, of Forests, from Toungoo to the charge of the Mingin subdivision of the Lower Chindwin Forest division.

Mr. C. B. Smales, Assistant Conservator of Forests, from Mingin to the charge of the Magwe subdivision of the Minbu Forest division.

Mr. R. F. Lowis, Assistant Conservator of Forests, from Taungdwingyi to the Yaw Forest division.

17th September, 1894.—No. 359.—Under the provisions of Section 69 of the Forest Department Code, examination leave for 28 days is granted to Mr. W. A Hearsey, Extra Assistant Conservator of Forests, with effect from the 8th October 1894.

17th September, 1894.—No. 14.—Mr. R. M. Kavanagh, Extra Assistant Conservator of Forests, relinquished charge of the Myalaung subdivision of the Katha Forest division, and availed himself of the two months and 15 days' privilege leave granted him in Revenue Department Notification No. 352, dated the 11th September 1894, on the forenoon of the 8th idem.